

DOCUMENT RESUME

ED 094 684

IR 000 850

TITLE Proceedings of the Full Board Meeting, International Council of Scientific Unions Abstracting Board.

INSTITUTION International Council of Scientific Unions, Paris (France). Abstracting Board.

PUB DATE Jul 73

NOTE 298p.

EDRS PRICE MF-\$0.75 HC-\$13.80 PLUS POSTAGE

DESCRIPTORS *Abstracting; Abstracts; Computer Science; *Conference Reports; Documentation; *Government (Administrative Body); Government Role; Indexing; Information Centers; *Information Science; *International Organizations; International Programs; Library Science; Library Technical Processes; National Organizations; Science Programs

IDENTIFIERS Information Services Physics Engineering Community; International Council of Scientific Unions

ABSTRACT

The 1973 full board meetings of the International Council of Scientific Unions Abstracting Board (ICSU AB) were held in London, at the invitation of Information Services for the Physics and Engineering Communities (INSPEC). The first part of the Proceedings refers to some activities of the board, such as working groups. Activities of ICSU AB member unions and member countries in all aspects of scientific and technical information are described in the second part. The third part reports a discussion on "The Role of Government in Information Transfer." The fourth part deals with a session on the International Serials Data System (ISDS) with particular reference to the present status and the problems of a national center. The fifth part comprises reports by member services and by selected observers. Finally, a discussion on indexing is reported. (Author/WCH)

BEST COPY AVAILABLE

BEST COPY AVAILABLE

PROCEEDINGS OF THE FULL BOARD MEETING

JULY 1973

LONDON U.K.

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

ICSU AB

BUREAU DES RESUMES ANALYTIQUES DU CONSEIL INTERNATIONAL DES UNIONS SCIENTIFIQUES
INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS ABSTRACTING BOARD

ED 094684

IR 000 850

C O N T E N T S

	<u>P A G E S</u>
FOREWORD	1
SESSION 1 : ACTIVITIES OF THE ICSU AB (Reports from the specialized Working Groups and Committees (Chairman : F.A. Stafleu).....	3
1.1. ICSU AB WORKING GROUP IN PHYSICS (D.H. Barlow).....	5
1.2. ICSU AB WORKING GROUP IN MATHEMATICS (U. Guntzer).....	9
1.3. ICSU AB WORKING GROUP IN BIOLOGY (Ed. Kennedy).....	11
1.4. ICSU AB WORKING GROUP IN CHEMISTRY (Ch. Weiske).....	15
1.5. COOPERATION AMONG EDITORS WORKING GROUP (A.J.C. Wilson).....	19
1.6. REFERENCE MANUAL STATUS (D. Martin).....	21
1.7. EXPERIENCE IN USING THE REFERENCE MANUAL (M. Mallet).....	23
SESSION 2 : REPORTS FROM MEMBER COUNTRIES AND MEMBER UNIONS.....	
(Chairman : U. Guntzer).....	29
2.1. REPORTS FROM MEMBER COUNTRIES.....	31
2.1.1. SOME ASPECTS OF SCIENTIFIC INFORMAT- TION IN BELGIUM (A. Bruylants)....	33
2.1.2. COMITE NATIONAL DE DOCUMENTATION SCIENTIFIQUE ET TECHNIQUE Annual Report (J. Michel).....	43
2.1.3. USA REPORT (J.J. Lloyd).....	69
2.2. REPORTS FROM MEMBER UNIONS	73
2.2.1. IUCr (A.J.C. Wilson)	75
2.2.2. IUGS (L. Delbos).....	79
2.2.3. IUPAC (J. Barrett).....	81

CONTENTSPAGES

SESSION 3 : ROUND TABLE : ROLE OF GOVERNMENTS IN INFORMATION TRANSFER	
(Chairman : D.H. Barlow).....	85
3.1. M. Corning (U.S.A.).....	87
3.2. J. Michel (France).....	121
3.3. M. PERRY (U.K.).....	123
SESSION 4 : ISDS (INTERNATIONAL SERIALS DATA SYSTEM)	
(Chairman : F.A. Stafleu).....	129
4.1. STATUS OF ISDS (M. Rosenbaum).....	131
4.2. PROBLEMS OF A NATIONAL CENTER LINKED WITH ISDS (M. Koster).....	137
SESSION 5 : REPORTS FROM MEMBER SERVICES AND SELECT- ED OBSERVERS	
(Chairman : F.A. Stafleu).....	147
5.1. REPORTS FROM MEMBER SERVICES.....	149
5.1.1. ASTRONOMY AND ASTROPHYSICS ABSTRACTS (F. Henn).....	151
5.1.2. AMERICAN INSTITUTE OF PHYSICS (H.W. Koch).....	153
5.1.3. AMERICAN PSYCHOLOGICAL ABSTRACTS (H. Van Cott).....	155
5.1.4. BIOLOGICAL ABSTRACTS (Ed. Kennedy)	171
5.1.5. BULLETIN SIGNALETIQUE (N. Dusoulrier)	185
5.1.6. BIBLIOGRAPHIE DES SCIENCES DE LA TERRE (J. Gravesteijn).....	191
5.1.7. CHEMICAL ABSTRACTS SERVICE (D.B. Baker).....	193
5.1.8. CHEMIE INFORMATION UND DOKUMENTA- TION/BERLIN (Ch. Weiske).....	199
5.1.9. ENGINEERING INDEX INC. (J.E. Creps)	203
5.1.10. INSPEC (D.H. Barlow).....	221
5.1.11. JICST (Y. Yamamoto).....	233
5.1.12. US NATIONAL LIBRARY OF MEDICINE (M.M. Cummings).....	247
5.1.13. REFERATIVNYI ZHURNAL (A. Chernyi)..<	251
5.1.14. ZENTRALBLATT FUR MATHEMATIC (U. Guntzer).....	277

CONTENTS

PAGES

5.2. REPORTS FROM OBSERVERS.....	279
5.2.1. UNISIST (A. Wysocki).....	281
5.2.2. NFAIS (J.J. Lloyd).....	293
5.2.3. IFLA (A.J. Evans).....	297
5.2.4. IATUL (A.J. Evans).....	299
 SESSION 6 : INDEXING	
(Chairman : Ph. Parkins).....	301
 6.1. INDEXING CLASSIFYING, SEARCHING AS SEEN FROM THE ACADEMIC WORKSHOP FLOOR (K. Faegri).....	303
6.2. ANSWER (J.J. Lloyd).....	315
 GLOSSARY OF ACRONYMS.....	321

FOREWORD

The 1973 Full Board meetings of the ICSU AB were held in London , at the kind invitation of INSPEC.

The first part of the Proceedings refers to some activities of the Board, such as working groups.

Activities of ICSU AB Member Unions and Member Countries in all aspects of scientific and technical information are described in the second part.

The third part reports a discussion on "The Role of Government in Information Transfer".

The fourth part deals with a session on the International Serials Data System (ISDS) with particular reference to the present status and the problems of a national center.

The fifth part comprises reports by Member Services and by selected observers.

Finally, a discussion on Indexing is reported.

SESSION 1 :

ACTIVITIES OF THE ICSU AB

Chairman : F.A. STAFLEU

1.1. WORKING GROUP IN PHYSICS

by D.H. BARLOW

Chairman ICSU AB Working Group in Physics
Director INSPEC

The Member Services representative on the Working Group in Physics include the English language services of Physics Abstracts and those provided by the American Institute of Physics, the French language service Bulletin Signalétique, the German language service Physikali- sche Berichte, and the Russian language service Referativnyi Zhurnal. Also a member of the Working Group is a representative of the International Union of Pure and Applied Physics.

Following the meeting of the Working Group at the last ICSU AB Full Board Meeting in Ustaoset, while one official meeting has been held in Paris on March 29th, two specialist subgroup meetings between representatives of Bulletin Signalétique and Physics Abstracts have also been held in London and Paris to discuss special problems in obtaining compatibility between sections of the classification as used by each organization.

As for the programme of the Working Group, its objectives remain the same as reported last year :

- 1) Examination of exchange arrangements between Member Services to determine the extent to which co-operation can be achieved in covering fringe journals.
- 2) Working towards an internationally agreed classification scheme in Physics.
- 3) Construction of multi-lingual thesauri.
- 4) Measurement of quality of abstracts.

As the result of the past year we are definitely closer to achieving the first two of these objectives in particular the generation of an internationally agreed classification. On the question of thesaurus construction, the Working Group now feels that it is ready to tackle this and as detailed below the first steps are being taken to set this portion of the programme in motion. The following paragraphs give details of the individual projects.

Abstract Exchange

In the past various individual abstract exchange arrangements have been in operation between Physics Abstracts, Bulletin Signalétique and Physikalische Berichte. Discussions on the effectiveness of these exchanges showed that while they demonstrated the will to co operate between Member Services, the level of exchange was too small to prove any specific points or to give any economic advantage to the Member Services.

It is felt by the Working Group that for meaningful exchanges, they must be done on a longer scale and that the material exchanges must be directly processable in to the data bases of the Member Services without further intellectual operations.

Such exchanges obviously raise problems outside the scope of the Working Group such as member service policy, economic advantage and political factors. But nevertheless the concepts of such exchanges are felt to be correct but before they can be attempted the following steps ideally must be done first .

- 1) Generation of unified classification
- 2) Preparation of multi-lingual thesaurus
- 3) Agreement on abstract content

It has therefore been agreed to end the current manual exchange of abstracts as these are felt to have served their purpose.

Unified Classification

Work has proceed steadily on this project. The draft tabled last year has now been studied by the Scientific Counsellors of Bulletin Signalétique and it was felt at the March Paris meeting that agreement was possible on 70 % of the items. Two specialist meetings have been held in London and Paris and it is hoped to present the results of these meetings at the Board meeting.

In general the signs are hopeful that an internationally agreed classification between the physics community and all international abstracting and indexing services will become reality.

INIS applications

Attempts are being made to build a bridge between the ICSU AB classification and that used by INIS. Copies of the classification have been despatched to Vienna for study and a representative from INIS will be presenting his findings at the London meeting.

Physics Thesaurus

Work is now commencing on the generation of multi-lingual thesaurus in French, German, Russian and English. As this is a new project, a strong invitation has been extended to the USSR representatives to join in this project, and at the London meeting it is hoped to receive from all national representatives copy of any thesauri in their languages that could be used in the project.

As a first start the section OPTICS has been taken and the tree structure for this section available in the Physics Abstracts thesaurus is being translated into French and German for tests.

Abstract Comparison

A programme of comparison of the content of abstracts has been inaugurated and some 50 samples are being examined to determine what information elements should be contained within a typical abstract. The end aim of this programme is to produce guide-lines (if possible) for production by primary editors of abstracts in the physics field.

Extension of Working Group Scope

A suggestion has been made within the Working Group that the scope of the group be extended to cover Information, Computer Science and Mathematics. This proposal has been submitted to the Executive Committee for their approval.

The Future

As always, the strength of a volunteer Working Group is in the belief that the Members of the Group feel for the programme. I am happy to report a tremendous dedication and co-operation between our Members and would like to thank them for all they have done to bring such aims as a world unified classification nearer to fulfilment.

1.2. WORKING GROUP IN MATHEMATICS

Progress Report

by U. GÜNTZER

Chairman, ICSU AB Working Group in Mathematics

Chief Editor, Zentralblatt für Mathematik

In the year since the last Full Board Meeting in Ustaoset there has been one meeting of the Working Group in Paris on September 13th, 1972 at the editorial offices of Bulletin Signalétique. Unfortunately no representative of the Russian Member Service was able to attend.

I shall indicate only the main points discussed at that meeting and done afterwards :

1) Exchange of abstracts :

French theses covered by Bulletin Signalétique are taken by Zentralblatt für Mathematik and also covered there, and vice-versa for these first abstracted in Zentralblatt für Mathematik.

2) The current lists of periodicals have been exchanged and analysed. A sublist of tail-journals (as seen from Zentralblatt für Mathematik) has been given to Bulletin Signalétique for examination. This is step in the same direction as the Input Plan.

3) Furthermore an issue of Bulletin Signalétique section II0 has been compared with Zentralblatt für Mathematik rules concerning e.g. definitions of subfields within applied mathematics, and the result has been communicated to Bulletin Signalétique. Preliminary work of this type is essential for an exchange of abstracts.

4) No work has been done in the area of classifications, because Zentralblatt für Mathematik has the same classification scheme as the American Mathematical Society. All future changes should therefore only be made in accordance with the American Mathematical Society.

1.3. WORKING GROUP IN BIOLOGY : REPORT TO
ANNUAL ICSU AP MEETING, LONDON, 1973

by Ed. Kennedy
BIOSIS, Director for Sc. Affairs

Since the 1972 annual meeting of ICSU AP, the Working Group in biology met three times and accomplished much of its work by mail. The most recent meeting of the Working Group was held on July 2 and 3, only a week ago, in Paris.

The choice of agronomy as a topic for the initial in-depth comparison and study of classification jointly by CNRS and BIOSIS, and the reasons for this choice, were stated in the report presented at the last General Assembly. Since that time, staff from both the BULLETIN SIGNALETIQUE and BIOLOGICAL ABSTRACTS have prepared new classification schemes for agronomy which were studied and compared at length for the ultimate purpose of arriving at a common classification scheme that would be acceptable to both organizations. Prior to development of the new classification scheme, it was demonstrated that the interpretation and use of each other's present schemes was almost 100 %.

Work on a new classification scheme based on input from both organizations progressed more rapidly in the areas of soils, agronomy and horticulture, and silviculture than in the phytopathology and pest control sections. Differences between BIOSIS' and CNRS' classification for phytopathology and pest control were even greater than in the sections studied earlier. After considerable discussion, mutually acceptable approaches were followed which eventually led to a new and acceptable classification scheme for phytopathology and pest control. The new classification for all of agronomy, including phytopathology and pest control, was finalized at the recent meeting in Paris.

BIOSIS AND CNRS have agreed on a list of ten journals from which approximately 100 abstracts will be selected and, using the new classification scheme for the broad topic of agronomy (soils, agronomy and horticulture, silviculture, and phytopathology and pest control), abstracts assignments will be made by each organization. The journals chosen are journals covered by both BA and BS. They represent the major sections discussed above. This exercise is intended to reveal how readily and with what degree of consistency each organization can use the new scheme. It is expected to be completed by the end of 1973.

The Working Group has agreed that it would be better to continue work on a new classification system for the remainder of the plant sciences than to change at this point to pesticides or pollution, as had been considered previously. Thus, it was agreed that both BIOSIS and CNRS will begin to analyze and compare the remainder of the botany sections and to independently work on new classification systems for plant physiology, plant morphology, systematic botany, etc.. The goal of the Working Group is for BA and BS to develop a suggested classification scheme for these sections by yearly 1974 so that it can be reviewed at their next meeting in February.

The accomplishments of the Working Group in Biology toward a common classification scheme for a portion of the plant sciences and the implications of such cooperative efforts for the future, internationally, was presented at the second general assembly of the European Association of Editors of Biological Periodicals (ELSE) which met in Ustaoset, Norway, June 25-27, 1973.

The Working Group in Biology has considered the mutual needs of both BA and BS for a classification scheme for bio-engineering. Several approaches for coping with this problem have been suggested, and a classification scheme for use by BS in 1974 was submitted by one of their consultants. Both BA and BS agree that

this scheme is not appropriate for immediate adoption, but it is being studied and compared with that used by Excerpta Medica and Medlars. Further discussion of this topic is planned for the early 1974 meeting of the Working Group. Also, bio-engineering has been suggested to ICSU AB Planning and Steering Committee as a possible topic for a future annual meeting program, with the suggestion that all ICSU AB members interested in the topic be invited to participate.

1.4. WORKING GROUP IN CHEMISTRY

By Ch. WEISKE
Chairman, ICSU AB Working Group in Chemistry

During the year since the last Full Board meeting the Working Group (WG) has met once, in Columbus, Ohio, in November 1972.

The following items have been discussed :

1. Classification Schemes in Chemistry

Since the last report on the comparison of the classification schemes in chemistry in 1970 Chemischer Informationsdienst (CID) has changed its scheme and Bulletin Signalétique (BS) plans to change its scheme for 1974. It was not considered to be necessary to up-date this comparison, but the members present agreed to keep each other informed of changes. This procedure is thought to be one way towards a common classification scheme.

The UDC is not used by BS, Chemical Abstracts Service (CAS), and CID, and it was stated that it would be desirable to determine precisely why the Abstracting and Indexing Services in chemistry do not make use of UDC. The UDC and its relationship to the Member Services is therefore one item on the agenda of the next meeting of that Working Group.

2. Cooperation among Member Services in Chemistry

CAS and CIDB are deeply involved in a cooperation program on input CIDB abstracts and indexes for CAS German papers and patents. A report on these activities is presented to the participants of this Full Board meeting (1). Among the other Member Services an exchange of journals or advance copies is arranged. Further possible cooperation is suggested. The possible comparison of abstracts was discussed, but it was decided that no steps in that direction need to be undertaken. The Working Group will watch the studies of the Working Groups in Physics and Biology.

3. Multilingual Thesaurus in Chemistry

The Working Group members have found out that the main or essential problem in chemistry is that there do not exist bi- or multilingual indexing vocabularies. It was agreed that further study and work in this area were desirable. For this reason the vocabulary control systems and files presently being developed at BS and CAS should be the basis for a test project that could show the feasibility of producing multilingual thesauri.

4. Relationship to the IUPAC Interdivisional Committee on Machine Documentation in the Chemical Field

IUPAC has an Interdivisional Committee on Machine Documentation in the Chemical Field. The purpose of the Committee is "to work on standardization and codification in the machine handling of chemical information within the total process of storage and retrieval for transferring original information through primary publications to the final user" (2). There is no doubt that the work of this Committee is of interest to the Member Services in chemistry, and liaison with this Committee is being considered.

(1) D. Baker and C. Weiske : Status of Cooperative Program between Gesellschaft Deutscher Chemiker and the American Chemical Society in Abstracting and Indexing.

(2) IUPAC Information Bulletin 39 (1971) pp. 25-28

5. Standardization of Bibliographical Data

The Working Group discussed the use of bibliographic strips on primary journals. These strips consisting of the journal code (CODEN), volume number, issue number, inclusive pagination and year of publication, are of help in the workflow of Abstracting and Indexing Services. Also a Document Identification Number, a number for each separate paper, would be welcomed, and the Working Group encourages the early development of such a number. The approval of a Common Serial Data System in chemistry depends on the results of the ICSU AB Input Plan. The Working Group recommends working within the Input Plan and deciding later if and when a separate Serials Data System is required.

6. User Study in the Field of Chemistry

This topic was discussed, but a decision was postponed.

7. Problems of Systems Interconnexion

As soon as the 1972 study by N. Dusoulier is available it will be reviewed by the Working Group.

8. Cooperation with Primary Journals

One-time analysis of documents is becoming more and more widespread. That means that the index entries are already on tape, when primary journal editors are working to produce their annual journal indexes. There is good reason for Member Services to consider offering to do the indexing for those journals which wish to cooperate.

The Working Group also discussed the ISO recommendation on standard abstracts. The Working Group agreed that this recommendation should be approved.

9. Mission-Oriented Systems

There are some indications that with governmental assistance mission-oriented systems will be established. That means duplication of effort in fields which are already covered by ICSU AB services. For economic reasons the Working Group recommends not to encourage the establishment of new international systems in mission-oriented areas unrelated to the activities of the discipline-oriented services.

1.5. WORKING GROUP ON COOPERATION AMONG EDITORS

Report for 1972-1973

by A.J.C. WILSON
Chairman of the Working Group

The Joint Working Group on Cooperation among Editors met briefly in Ustaset on 25 June, and for two full days on 13 and 14 November 1972. The main business was preparations for the Meeting of Editors that immediately preceded the present Full Board Meeting. Other matters discussed were the future programme for the Working Group, and the leaflet 'Cooperation among Editors'. This leaflet has had a very wide circulation, and has received a good deal of favourable comment. The main criticism has been that it is too elementary to be really useful, and the Working Group is considering the production of a second leaflet, or possibly of a revised edition of the first.

As already mentioned, the Working Group organized a Conference of Editors, held at the Royal Society on 4 and 5 July 1973, on the general theme 'Primary Publications and Secondary Services : Partners in Information Flow ?' This was attended by approximately 130 participants, and the stimulating papers led to lively discussions. A visit to the operations of the abstracting service 'INSPEC' at Hitchin was followed by a cocktail party, and the Conference concluded with a reception given by the Royal Society.

1.6. UNISIST REFERENCE MANUAL

FOR MACHINE-READABLE BIBLIOGRAPHIC DESCRIPTIONS

by M.D. MARTIN, Systems Manager
INSPEC

During the twelve months since the Full Board meeting in Ustaoet last year, the UNISIST Reference Manual, whose preparation has been the responsibility of the UNISIST/ICSU AB Working Group on Bibliographic Descriptions, has continued to make progress towards full publication and use.

Miss Frances Wood of the University of Sheffield presented her report on the testing of the Manual to a specially convened Working Group meeting in November 1972. As a result of the report and subsequent discussions, a number of changes were agreed. The only area of major substantive change in the recommendations on bibliographic record content was in connection with patents, where it proved possible to simplify the proposed requirements for bibliographic description. Otherwise, substantive changes were few in number but the presentation of the Manual needed some rethinking ; and in particular it was considered desirable to emphasise the fact that the Manual was intended to provide guidelines for system designers, rather than a reference source for the individual cataloguer.

The consequent revision of the Manual was put in hand at the beginning of 1973, and has proved to be a much larger task than originally anticipated. It is currently nearing completion, and the final text will be circulated to the members of the Working Group for comment in the very near future. Arrangements have been made for the Manual to be printed and published by UNESCO.

There is some evidence that the Manual is already beginning to play a significant part in the thinking of ICSU AB member services, both as a basis for the design of their own in-house systems, and as a framework for bilateral or multilateral discussions on cooperation between services. A good deal remains to be done, however : there are still important gaps in the coverage of the Manual, and the importance of an adequate maintenance procedure still needs to be emphasised.

1.7. EXPERIENCE IN USING THE REFERENCE MANUAL

by M. MALLET

Bulletin Signalétique

Introduction

Bulletin Signalétique has always taken part in UNISIST/ICSU AB work on bibliographic descriptions and from the start has agreed to apply the resulting recommendations. This participation was most useful to Bulletin Signalétique in that it enabled us, on the one hand, to have access to a wide range of practice in this field and, on the other, to benefit by work in progress to adapt progressively our usage to that of UNISIST. Whenever changes had to be made or decision taken, they were, as far as possible, in harmony with the Working Group on Bibliographic Descriptions work or proposals.

A first major step was taken in 1971 when certain sections of Bulletin Signalétique were automated. This led to certain changes in cataloguing but the main change over was made in 1972. (Bearing in mind the fact that all changes have to be ready six months before publication of the first number of Bulletin Signalétique in any given year, design of the work-sheet was done by July 1972).

Basic Principles

Bulletin Signalétique work on the change over was guided by two basic principles.

- Usage for bibliographic descriptions is based on the Reference Manual and is not a mere tinkering of established practice in order to bring it more or less into line with that of UNISIST.
- The Reference Manual was considered as a common carrier and not as a set of hard and fast rules for entry or display. Conversion from PASCAL format is by program.

Nevertheless, whenever possible, the Reference Manual was also considered as a cataloguing manual.

Constraints

For various practical reasons Bulletin Signalétique decided it would have only one work-sheet for all kinds of literature. This meant that the work-sheet should be so designed as to allow for the several elements for each type to be permutable.

The work-sheet is not only a document for entry but is also printer's copy. Therefore such things as order of elements, type, etc. had to be established in consequence.

The system contains a limited number of fields and ways had to be found to use these few fields for all the tags contained in the Reference Manual.

Procedure

Taking the Reference Manual as the basis of bibliographic descriptions the whole structure and contents of Bulletin Signalétique usage was overhauled. This is not as awful as it sounds. On the one hand the Reference Manual is itself based on Member Services' practice and, on the other, Bulletin Signalétique had already made many changes of content in line with Working Group on Bibliographic Descriptions' work. The greatest change was that of isolating or tagging of the various essential elements which already existed in Bulletin Signalétique usage.

All elements described in the Reference Manual were matched with those in Bulletin Signalétique usage. Those elements which are in the Reference Manual but not in Bulletin Signalétique usage had to be provided for; e.g. country codes, literature type, bibliographic level. Those elements which were in Bulletin Signalétique usage but not in the Reference Manual were examined one by one and, in many cases, dropped. (One of the great advantages of the Reference Manual and all the work which has gone into it is that it obliges to clear thinking and leads to the clearing out of much dead wood). Those retained were, of course, suitable treated in reformatting for UNISIST.

PASCAL - 1973

Although most of the Reference Manual's recommendations are included in PASCAL-1973 there are still a number of them which will not be entered before 1975. The reasons are of two kinds.

- For some elements the relevant data does not yet exist, e.g. ISSN and ISDS "Short Title".
- PASCAL itself is in process of restructuring and will not become operational, as PASCAL-3, before 1975. Although some elements are already entered the tagging is unsatisfactory and though sorting can be done it is rather clumsy. This will be improved in 1975.

Patents

The one exception to this rosy picture is patents. Bulletin Signalétique has an agreement with INPI (Institut National de la Propriété Industrielle), French Patent Office, whereby their abstracts are entered into Bulletin Signalétique. Our work-sheet for patents is not the same as the ordinary work-sheet and is, in fact, INPI work-sheet with certain additions for compatibility with system PASCAL.

Naturally UNISIST recommendations are under study and we hope that PASCAL-3 will be able to furnish full material in UNISIST format in 1975.

Problems Encountered

General

It would almost be true to say that no problems were encountered, apart from the hard thinking and hard work put into this.

The fact that the contents of elements had rarely to be changed and that elements which had to be changed to come in line with the Reference Manual are few, meant that reconsideration of existing elements and definition of new ones was reduced to a minimum.

On the contrary, I would be tempted to say that adopting the Reference Manual has been a great help to us in our cataloguing work.

Before, elements were embedded in a running text with few contours. A place had to be found for unfrequent elements (which are very frequent) and this was done after great thought and much discussion. Subtle relationships were brought out with loving care and lace-work was well to the fore.

Now the hard thinking goes into the analysis of the document and the abstracting of the relevant elements from it.

Personnel

Converting personnel to the new usage was not a problem. As I said before, the contents of former usage was hardly changed and what changes to be made were for the better. Many elements are more formalised than before and this is a great asset for preparation of work-sheets.

Further work

A certain number of problems do remain for Bulletin Signalétique.

- Patents. This has been dealt with above.
- ISSN/CODEN. These are alternatives in the Reference Manual. Either one or the other is essential. For various reasons, Bulletin Signalétique has never used CODEN and to enter it now for a few months run is quite impracticable. Bulletin Signalétique has always agreed to enter ISSN ever since it was first mooted and will do so as soon as the necessary data base has been furnished.
- Double references. The problem of double references has not yet been solved in a satisfactory manner at Bulletin Signalétique. (e.g. translations, paper appearing in two journals, etc.). Although we do, in fact, give the two references, one set is not usable for sorting. The problem is at present under study.

Ancillary Comments

Mention should also be made of translitteration. Bulletin Signalétique switched to UNISIST/ICSU AB translitteration for the cyrillic alphabet, Slavic languages in 1972. For the Roman alphabet characters with diacritical marks these remain in the text of Bulletin Signalétique but are translitterated by program in the tapes. Only the last three characters in the table are entered as recommended by UNISIST/ICSU A9.

The UNISIST/ICSU AB list of word abbreviations is used for the abbreviation of most elements when necessary. This does not apply to the abbreviation of journal titles as the change over will only be done, as I said before, when we have the relevant ISDS data base. For certain captions in the reference field we have been obliged to keep our old abbreviations for the simple reason that the words are not in the list and it would seem rather peculiar to find them written out in full in such a place.

Which leads me to mention that although the list is a very good thing and has been the means of interesting people in the main aims of UNISIST it does have faults. The first is that it does not contain enough words even for Science and Technology. The second is that cities and countries are found in it in a very incoherent manner.

Final Comments

All Bulletin Signalétique's work has so far been done on the first draft of the Reference Manual. A further revision will be necessary when the final version is finished. Certain changes will no doubt have to be made, for the most part minimal.

In 1974 the main change is entry of bibliographic level, but all other changes can only be made in 1975 as Bulletin Signalétique's policy is never to change during a publication year.

SESSION 2 :

REPORTS FROM MEMBER COUNTRIES AND MEMBER UNIONS

Chairman : U. GÜNTZER

2.1 REPORTS FROM MEMBER COUNTRIES

2.1.1 SOME ASPECTS OF SCIENTIFIC AND TECHNICAL INFORMATION IN BELGIUM

by A. BRUYLANTS
Belgium Representative

For this first report as a Representative of Belgium, I have chosen to talk about three organizations :

- The National Centre of Scientific and Technical Documentation;
- The Documentation department of the "Fédération des Industries chimiques de Belgique";
- and, the Library of pure and applied sciences of the University of Louvain.

As you can see, it is not a survey of the present situation in Belgium, but only some interesting realizations.

I hope to have the opportunity to complete this description during the next meetings and to be able to show you that in my country many public and private bodies care about the documentation problems and are seeking to solve them.

DIRECTORY OF BELGIAN RESEARCH CENTRES WITH LIBRARIES

This directory (first edition 1967, second edition 1971) lists about 1250 organizations and is divided in four parts : the directory itself, listing the organization by city and describing them; an index of cited persons; an organization index; and a bilingual (French, Dutch) subject index.

TRANSLATIONS DEPARTMENT

This department provides copies of available translations and gives information on translations existing elsewhere. It also supplies translation from Russian into French, and keeps a register of qualified translators.

REFERRAL AND RESEARCH

The CNDST consider as an important task to inquire about user needs. The first study of this kind was carried out in 1967 in the medical field. Similar reports were made on chemical information and documentation in 1969, on technology and engineering sciences in 1970 and 1971 on the needs of Belgian scientists for translations of scientific literature written in more or less difficult languages like Russian or Japanese.

One of the CNDST's (Centre National de Documentation Scientifique et Technique) chief functions as a coordinating center for information services is to put an inquirer in touch with the best source of the specific piece of information he happens to be seeking. Very often, this service brings together scientists who are working in the same field. This kind of work necessitates contacts with all sources of information throughout the world. The CNDST works closely with the following organizations : Centre National de la Recherche Scientifique; European Launching Development Organization; European Space Research Association; European Translation Center; Food and Agricultural Organization; International Organization for Standardization; North Atlantic Treaty Organization-Advisory Group for Aeronautical Research and Development; National Lending Library for Science and Technology; Organization for Economic Cooperation and Development; United Nations Educational, Scientific and Cultural Organization; and Vsesoyuznyi Institut Nauchnoi i Tekhnicheskoi Informatsii Akademii (All Union Institute of Scientific and Technical Information, Academy of Sciences, U.S.S.R.).

AUTOMATION

The CNDST is engaged in research into documentation problems, including automation of its own services, as well as those of the Royal Library. The processes for which mechanization routines are or will be used are the catalog (card, printed catalogs, shelf lists, alphabetic subject index to the classified catalog, accession list), periodicals (claims, binding lists), Union lists, circulation, and acquisitions (orders, gifts, and exchanges).

At first, a step-by step mechanization with retention of manual systems will be carried out. However, the staff of the CNDST believes that ultimately the entire card catalog (several million cards) will be replaced by a mechanized store of vast capacity. Access to this store will be through interrogation consoles that are essentially viewing screens (cathode-ray display tubes) with push-button controls. These will allow for a progressive dialogue between the user and the catalog. The user can modify his index terms in light of the machine response and arrive at the number and relevance of documents needed after seeing a display of title pages or pages of the document on the screen. The system, based on a complete microfilm store, can provide him with a full-size printout of what has been chosen.

To meet the needs of the CNDST alone, about ten such units directly on-line to the computer will be needed. In full operation, such system will make it possible for information centres all over the country to be part of a telecommunications network, whereby remote consoles could key in to the centre for its stored information.

These systems are still in a developmental stage. However, processed computer tapes, obtainable from several abstracting and indexing services, such as Chemical Abstracts Service, Chemical Titles, Chemical Biological Activities, Medlars, Excerpta Medica, and Engineering Index Inc., will be used in the near future. This new development will allow the centre to implement a series of selective dissemination of information services.

Toward the end of 1968, an improved chemical searching system was installed, based on Chemical Abstracts Service (CAS) in microform. All abstracts published in CAS since 1907 have been placed on 16-mm microfilm. This film is packaged in plastic magazines for use with microfilm reader-printer equipment.

Each magazine of microfilm holds approximately 30.000 abstracts. Four magazines contain all the abstracts published in an entire volume (26 issues) of CAS. The entire collection of more than 4.000.000 abstracts is contained in 157 magazines.

Use of the microfilm abstracts begins with consulting the printed volume and collective indexes to compile a list of abstracts references. Abstracts are then read on the viewing screen. Photo-copies can be made on demand.

Preliminary experiences indicate that the conversion of a library to electronic data processing usually requires a much longer period than might be expected. A conversion period of 15 to 20 years is not unreasonable.

DOCUMENTATION DEPARTMENT OF THE "FEDERATION DES INDUSTRIES CHIMIQUES DE BELGIQUE"

Scientific and technical documentation

The most important aim of the Department for Scientific and Technological documentation is to diffuse the scientific and technical information very rapidly towards the 700 members of the Fédération. Different means are used to achieve this.

OPERATING THE CLASSICAL DOCUMENTATION METHODS

Periodicals - Booklets - Accounts

About 800 periodicals and a great number of technical scientific or economical booklets and accounts are analysed immediately after their publication; references of the articles that could be of interest for our members are grouped according to the principal subject or subjects :

- AA Analysis and Equipment
- AD Adhesives - Pastes - Gelatines
- AE Aerosols
- AG Agricultural industry : Pesticides - Fertilizers
- AL Food industry
- CI Inorganic chemistry
- CH Cosmetics - Perfumes (except soaps)
- CO Organic chemistry (except petrochemical industry)
- EN Environment
- FA Pharmaceutical and products
- GC Chemical engineering and Connected problems
- HM Mineral oils - Lubricants
- IE Economical information
- NO Standards - Tests - Trials
- OT Organization - Management - Labour - Marketing - Maintenance
- PE Natural and synthetic rubbers
- PF Plastics (Foams - Films)
- SD Soaps - Detergents - Fatty matters
- SH Security - Healthcare
- TR Transportation - Packing
- VP Varnish - Paint - Inks
-

For each article, the title (with key-words in fat pinking) complete bibliographical reference and a short account are given.

Every fortnight the complete list of these references is sent to every industry member of the Fédération under form of a "Technical flash".

About 5.000 accounts or references are brought through this channel to the scientific and technical personnel of the Belgian Chemical Industry.

The posting up of a file containing all references and information according to the subject, permits a rather incomplete but rapid retrospective research without high administration costs.

Books and other works

On the other hand the library contains about 6.500 books and receives over 50 new works a month. A bibliographical analysis of these works is published in the magazine "Industrie Chimique Belge - Sciences".

A characterization by key-words makes it possible to establish on the computer a list of the books with the key words (in alphabetical order) one or several explanation, the author's name and the date of entry. This list, together with a card-index, allows to determine very rapidly which books are concerned to a precise subject, this in order to answer the numerous technical questions from our members.

USE OF MODERN DOCUMENTATION FORMS ON COMPUTER

The Service advises in the choice of the best adapted automatic information source, brings his help in the redaction and analysis of the research profiles and runs these profiles on the computer on account of the different departments.

*
* *
*

Regularly the managers of documentary and information Services from the most important Belgian Chemical Companies gather to exchange points of view and experiences and to establish a common policy in this field.

THE LIBRARY OF PURE AND APPLIED SCIENCES OF THE UNIVERSITY OF LOUVAIN

The "Pure and Applied Sciences Library" of the Catholic University of Louvain was organized, a few years ago, to meet the needs of teaching and research in fundamental and applied sciences, including engineering and agricultural sciences. Actually, it is a grouping of all the formerly independent departmental libraries; this grouping is intended to increase efficiency in management and equipment.

The Library is located on the heart of the campus in such a way that all the buildings are situated within walking distance.

Such a situation makes it possible for the Library to live osmotically with its surroundings and to perform its own functions which are : to be a centre of the scientific life, to promote public relations regarding to scientific activities, to act as a receiver and a dispenser of scientific information.

The Library's management is guided by three principles : Participation, Economy, Efficiency.

According these principles, only books may be taken out; the user gets free access to about 200.000 volumes; the catalog contains an alphabetical authors index and a descriptors index.

The alphabetical index includes following items : author's and co-author's name; title; publishers; bibliographical address; serial ISBN numbers; the promotor of the thesis (if any); the industrial firm which received the patent (if any); the university or institute where the work was done; the kind of publication, and the descriptors. The descriptors are determined by specialists in various fields. Every book is defined by a maximum of 15 descriptors which make a "concept of ideas".

The second catalog is a subject index and includes the various descriptors, author's names and the serial number.

These organization principles find their counterpart in the architectural realization.

- i) books not frequently used are stored in the basement;
- ii) the administration rooms include lending services, photocopying machines, microfilms and microfilms readers and catalogs;
- iii) a mezzanine is equiped with two lecture rooms;
- iv) reading rooms offer about 300 seats and free-access to about 200.000 volumes, stored on five floors.

Every floor is dedicated to one or two different fields according relative relevance. In this way, ease of access is assured and the individuality of the various fields respected while contact among them is enhanced.

On the different floors are thirty-five seats in 17 stalls in order to permit typing or discussions between two or three people.

A cafeteria is offering room and opportunity for breaks.

This new organization is planned to be operational in its new building on October the first of this year.

Requests for further information :

- i) CNDST (Centre National de Documentation Scientifique et Technique)
* Boulevard de l'Empereur, B 1000 BRUXELLES (Tel. 02/13.61.80
Telex 21157)
- ii) Fédération des Industries Chimiques de Belgique
Madame J. VEKEMANS, Conseiller Scientifique
49 square Marie-Louise, B 1040 BRUXELLES (Belgium)
- iii) Mr L. VAN SUMAEYS, Dr Sc.,
Bibliothèque des Sciences Exactes, U.C.L.
Schapenstraat 39 - B 3000 LOUVAIN (Belgium)

THE NATIONAL CENTRE FOR SCIENTIFIC AND TECHNICAL DOCUMENTATION (CNDST)

The National Centre for scientific and technical documentation was founded in 1964 by a proposal of the Head Librarian H. LIEBAERS, and the Librarian A. COXX of the Royal Library of Belgium, in Brussels. It is an autonomous body, and a non profit organization financed by the Belgian government through the Ministry of Education and Culture. The aim of the Centre is to document scientists in all fields of fundamental and applied sciences and to promote documentation in industry, and university.

People from outside are invited to ask questions, orally or on a written questionnaire form.

The questions most frequently asked may be classed under the five following headings :

- a) exact reproduction (such as a text or a diagram);
- b) fill-in-the blank (an address, a date, a physical constant);
- c) descriptive information (a biography, a definition, a method);
- d) "information about" (how some things work);
- e) lists of references.

A major concern of the Centre is how to get information to small and medium-sized industrial firms to keep them current on relevant technological progress.

An other type of activity of the same size is to provide individuals (like physicians, engineering advisers) with adequate information. Beside this primary task, the CNDST has a number of particular activities some of which are described in the following.

UNION CATALOG

"A Belgian and Luxemburg Union Catalog of Foreign Periodicals, currently being published" was established in 1965 (2 volumes 1982 pp), giving an exact listing of the serial and periodical holdings of 400 participating libraries throughout the country.

PERMANENT BIBLIOGRAPHY OF BELGIAN SCIENTIFIC PUBLICATIONS

The source documents are twofold : relevant Belgian journals and articles published abroad by Belgian authors.

2.1.2. NATIONAL COMMITTEE OF SCIENTIFIC AND TECHNICAL DOCUMENTATION

1972 Annual Report

by J. MICHEL
France, Representative

SCHEME OF THE REPORT

1. GENERAL
2. PREPARATION OF THE BASIC STRUCTURES OF THE NATIONAL NETWORK FOR SCIENTIFIC AND TECHNICAL INFORMATION
 - 2.1. Outline of the network
 - 2.2. BNIST (National Board for Scientific and Technical Information)
 - 2.3. The networks by fields
 - 2.4. Data banks
 - 2.5. General services
 - 2.6. Regional branches
 - 2.7. Libraries
3. PREPARATION OF THE RESOURCES NECESSARY TO THE WORKING OF THE NETWORK
 - 3.1. Development and compatibility of the documentary languages
 - 3.2. Study of users' needs
 - 3.3. Training
 - 3.4. Research
4. INTERNATIONAL RELATIONS
 - 4.1. E.E.C.
 - 4.2. United States
 - 4.3. International organizations
5. CONCLUSION

6. APPENDICES

- 6.1. Membership of the 'Scientific and Technical Information and Documentation' Coordinated Complementary Action Committee of the DGRST.
- 6.2. Decree No. 73-115 dated February 5th, 1973 creating a National Board for Scientific and Technical Information
- 6.3. Operations carried out in 1972

1. GENERAL

The National Committee of Documentation (CND) created in 1968 at the DGRST was replaced at the beginning of 1973 by the National Board for Scientific and Technical Information (BNIST). Its last year of operation was therefore 1972.

The help given by the 'Scientific and Technical Information and Documentation' Coordinated Complementary Action Committee of the DGRST * enabled it to initiate important work for the foundation of the national network for scientific and technical information and to prepare the work of the BNIST, which is going to be the coordinating element.

Actions carried out in 1972 correspond to the priorities accepted by the Study Group of the Research Commission for the VIth Plan preparation (GR.5). They all seek to encourage the organization of a national network for information in terms of large fields. They follow three general lines.

(1) Preparation of the basic structures of the network

- . Creation and starting of the BNIST
- . Organization of the networks by fields (working groups and preliminary studies)
- . Development of data banks (in the bio-medical field)
- . Feasibility study of a National Board for the guidance of users towards appropriate organizations or centres
- . Creation of regional branches for scientific and technical information (Nantes-Lyon).
- . Study of a mechanized system of union cataloguing for libraries and documentation centres.

* See Appendix 1.

(2) Preparation of the resources necessary to its functioning

- . Development and harmonization of documentary languages (thesauri by fields, macro-thesauri, coordinating committee)
- . Study of needs (synthesis and repackaging of information)
- . Training of users and specialists
- . Development of research in information sciences and techniques

(3) Coordination of international relations and liaison with international networks (agriculture, metallurgy, medecine) and international organizations (UNESCO, OECD, ICSU, FID, CODATA)

2. PREPARATION OF THE BASIC STRUCTURES OF THE NATIONAL NETWORK FOR SCIENTIFIC AND TECHNICAL INFORMATION

2.1. Outline of the network

The national network, which consists of all the organizations for documentation and information, grouped by field of activity and thus constituting sub-networks by fields, aims at encouraging the notification and the access to relevant information, in the shortest time, at the lowest price.

Such an organization has the advantage of leaving each centre independent, while making possible :

- (a) the pooling of the power of the different analysis and collecting centres ;
- (b) the aggregation of documentary holdings established in France or in foreign countries ;
- (c) their use in various forms according to the nature and type of the required information.

Two principles have determined the constitution of this network :

- users' participation in the definition of the products and the management of the operations ;
- progressive self-financing to achieve a gradual reduction of the Government subsidy.

During the year 1972, the CND and the Coordinated Complementary Action Committee of the DGRST furthered the organization of the national network by developing, according to various methods (constitution of working groups, launching of preliminary studies, financial instigations, etc.) the key-elements of the network, and in particular the primary element :

2.2. BNIST (National Board for Scientific and Technical Information)

The draft decree creating the BNIST, a small permanent organization instructed to determine the general information policy in France and to supervise its execution, was prepared by a working group founded under the auspices of the DGRST. It was approved by the Advisory Board for Scientific and Technical Research, and submitted in January 1972 for the scrutiny and signature of the Ministers concerned.

The decree that was published in the Official Gazette of February 7th, 1973 rescinds the documents creating the CND.*

Composition : The National Board consists of :

- (a) a steering committee
- (b) a permanent secretariat

The steering committee consists of 7 State representatives, 5 of whom are appointed by the Ministers of National Defence, Foreign Affairs, Economy and Finance, and Industrial and Scientific Development, and 2 of whom are designated by the Prime Minister.

* See Appendix 2.

Besides these State representatives there are 16 representatives of the scientific and technical community who are designated, after consulting the General Delegate for Scientific and Technical Research, by the Minister of Industrial and Scientific Development.

The Chairman of the steering committee is appointed by decree of the Minister of Industrial and Scientific Development, for a period of 2 years.

The permanent secretariat of the National Board is provided, under the control of the Director of Technology, Industrial Environment and Mines, by a permanent secretary who is appointed by decree of the Minister of Industrial and Scientific Development.

Responsibilities : These essentially refer to :

- (a) the definition of the trends of a national policy and its application ;
- (b) the coordination of documentation organizations and their setting in a national network ;
- (c) the promotion of information and research concerning information sciences and techniques ;
- (d) standardization ;
- (e) the training of specialists ;
- (f) international cooperation.

2.3. The networks by fields

The long and steady organizing work necessary to their starting up is only beginning. The degree of progress achieved during the past year differed in the various fields :

Chemistry : A National Centre of Chemical Information (CNIC) federating the AFDAC • and the ARDIC * was created in order to ensure the utilization of chemical information. The CNIC signed a double contract with the Chemical Abstracts Service.

- AFDAC : French Association for Mechanized Chemical Documentation.
- * ARDIC : Association for Research and Development in Chemical Information Science.

The aim of the first contract is to make available to French chemists the information received from the documentary holdings of the CAS through the utilization of the CA condensates, POST and CBAC tapes.

The AFDAC is instructed to ensure the promotion of the system and contracts with users. The IFP is responsible for data processing with the Pretext software.

It may be recalled that the CAS handles about 300,000 documents a year and that the research must be made in natural language.

At present, it is possible to use the CAS materials only for regular and selective dissemination of information. The number of profiles directed by the CNIC is now about 320 ; it should increase considerably in the course of the next two years.

In a parallel direction, the CAS has very recently made available new index tapes (ISF and CASIA) that should allow in the very near future a retrospective search service.

A second contract signed between the CAS and the CNIC enables the latter to make use of the whole CAS structure file, i.e. 2,000,000 compounds progressively entered in the Chemical Abstracts Registry System since 1965 and coded in the Morgan Topological Code.

This file is hardly utilizable at it stands, and the main aim of the contract is to test the DARC system retrieval procedures, on a corpus of considerable size.

The ARDIC, instructed to manage this second contract, must therefore, during the coming months, transcode into DARC 500,000 randomly chosen file compounds, incorporate within the general DARC code an appropriate screen system, arrange an optimum file

organization and make retrieval experiments from a list of questions of varying difficulty (definite compound, definite sub-structure, indefinite compound, indefinite sub-structure).

The value of such an experiment is obvious. For, if it is successful, it should enable chemists to put questions to the CAS holdings, using the language that is the most familiar to them. It would show the value of the DARC system in the compilation of specialized data banks. Preliminary retrieval tests on a 10,000 structure file have already proved very promising.

Electricity - Electronics - Telecommunications

A working group 'ELDOC' was set up to study the feasibility of a network in this field. It reported at the end of 1972 to the CND, who approved the report subject to some modifications concerning the role of the Steering Committee of the network : this committee will have to ensure the technical and financial management of the network, to serve as a link between the participants and to establish contacts with other bodies.

This committee could be affiliated to an association under the law of 1901 which would be used as a structure and would conclude agreements in its name. Approaches have been made to the Society of Electrical and Electronics Engineers, who entirely approve of this project.

One or more organizations having the required mechanized equipment could achieve the operations of centralization and decentralization of the data necessary to a rational and economical functioning of the network, all the participants in which would keep their normal and direct responsibilities towards their own customers.

The documentary holdings of INSPEC should supplement the resources constituted by the network.

A thesaurus covering the whole field has been completed with the help of the DGRST, under the leadership of M. Dewèze (Merlin-Gérin), and will be published shortly.

An effective starting of the network, however, requires the settling of some technical points (choice of the system) and financial questions.

Nuclear

A working group set up in June 1972 under the chairmanship of M. Balligand of the CEA made to the CND, in December a report that studies the juridical, financial and technical conditions for the achievement of a nuclear information network and the functions of the network. The procedure proposed by the group and accepted by the CND consists in adopting an organization able to ensure the best French participation in the international system SIDON/INIS. A cooperative association under the law of 1901 is to be created. It will include all the organizations or companies concerned with information in the nuclear field. The CEA, now national correspondent of the INIS system, will initially ensure the input of the French literature into the system and will, in return, make use of the INIS materials. A part of these tasks will be progressively decentralized. The French part of the INIS thesaurus was completed by the CEA with the help of the DGRST.

Metallurgy

Metallurgy is the first field to involve cooperation on the European scale. A temporary technical agreement was signed in 1972 for the creation of a system of metallurgical documentation and information (SDIM).

The working principles of the network are as follows :

- (a) sharing between countries of the documents to be analyzed, and utilization of a common multilingual thesaurus ;

- (b) supplying of data in the language of each analysing country (descriptions and abstracts) ;
- (c) fusing of the materials at the CID in Luxembourg and production of a magnetic tape that does not include the abstracts, these being stored in microfiche.

The material is utilized by the CID or by each country.

The system is starting very slowly. The CNRS is the French signatory of the agreement until the metallurgical field is organized ; a group has been studying its organization since 1972. The French network should come into existence at the end of 1973.

Agriculture

A working group, under the chairmanship of M. Poly, assitannt director of INRA, has drawn up the main lines of the network in the field of agricultural science and technology. This network covers 5 different fields :

- animal products
- plant products
- agricultural and foodstuffs industries
- rural planning and forestry
- agricultural economy

The purpose is to create, with the help of all the participants, a common documentary holding from which sub-files, answering specific needs of groups of users, will be created.

This implies the determination for all participants of

- a common philosophy
- common indexing and analysis rules
- a common language

This last item is being developed. INRA is acting as coordinator, but a permanent committee on which all parties concerned are represented is assisting in the work.

A union list of the periodicals received in the different departments of agricultural documentation will be available shortly.

In a parallel direction, a data processing system for the materials, compatible with those already used by some organizations participating in the network, is being studied?

A cooperation within the European Communities has been planned for 2 or 3 years. After much hesitation, an agreed standpoint is gradually being developed.

Agricultural economy

The Committee has supported the creation of a documentary sub-network that forms part of a larger economic and social documentation national network.

Oceanography

This field being multi-disciplinary, it is desirable to study the extent to which a documentary pool may be created from numerous holdings in France and in other countries. These combined data will be used for selective dissemination and for retrospective searches.

The CNEXCO is under contract to study this specific problem, using the MISTRAL software as starting point.

Moreover, an ad hoc group has studied since 1972 the field to be taken into account, the gaps existing, the problems of language, the participating possibilities of the various organizations, and the users' needs.

Medicine

The information problems in the bio-medical field have not yet been the subject of a thorough general study, but it is intended to create a working group in May 1973.

However, during the last year, the DGRST has participated in the financing of various operations :

(1) from a documentary point of view :

- creation of a 'biological and medical engineering' thesaurus
- translation of the MESH thesaurus (Medlars)

(2) from the data bank point of view :

- data bank in toxicology (INSERM)
 - (a) data from the anti-poison centres : collection of the 1972 data and preparation of the operational starting of this bank in 1973
 - (b) experimental toxicology : feasibility study of a data bank in that field (data to be taken into account, sources of data, data evaluation, potential users, cost of the operation)
- data bank concerning medicinal products.

The financing granted by the DGRST will enable this bank, created by Professor Ducrot of Necker Hospital, with the help of the Data Delegation and of the National Trade Union of the Pharmaceutical Industries, to enter, next year, into an operational phase.

2.4. Data banks

These allow direct and quick access to information and are bound to develop considerably. The CND has taken pains to demonstrate the value it places in their creation : taking into account the scantiness of the means available to the Coordinated Complementary Action Committee, the CND assigned relatively large amounts for the creation of medical data banks (see previous paragraph) and said that it wished the BNIST to encourage, in the future, this development in a greater number of fields.

2.5. General services

The research commission recommended the creation of several general services for the whole network :

- . a technical and scientific guidance centre ;
- . a national agency for unpublished documentation (research reports, theses, dissertations, translations)
- . a notification centre for research workers and research in progress financed by the State.

An experimental study concerning the creation of a national service of guidance towards sources of information in the field of science and technology was assigned to the ANRT.

This service will have to answer the following questions :
Where to find such information ?

or

Who can give us such information ?

The operation is now starting.

The first working year will make it possible to determine :

- (a) the type and volume of the questions ;
- (b) the nature of the users ;
- (c) the means to be used, in the future, to ensure efficient functioning of the service.

The service will work in close collaboration with the regional branches.

2.6. Regional branches

In order to improve the circulation of information, it is necessary to develop connections between the services producing information and the users. Thus, the CND furthered the creation of regional branches, starting with the two regions of Nantes and Lyons. The person responsible for each branch, acting in close liaison with the local organizations (Chamber of Commerce, university libraries, CEDOCAR, ANVAR, INSEE, INPI) and with the Delegate for Industrial Relations and the Technical Assistants of Industry, is instructed to :

- . collect or locate all the information peculiar to the region of interest for the development of science and technology ;
- . develop relations with specialized national centres by fields, in order to spread to a maximum the range of useful sources of information ;
- . inform laboratories, companies, organizations and research centres about the information they can have at their disposal ;
- . help the medium-sized and small firms to solve their problems, by giving them useful information ;
- . sensitize users to information, study their needs, and organize training sessions ;

Experiments are only just beginning, and it will be necessary to wait a few months before drawing the first conclusions. But one can already see the interest with which the operators of the 'information' branches are welcomed in industrial and university circles.

2.7. Libraries

Public and university libraries which put at the reader's disposal scientific and technical books are important elements of the national network. In the absence of an important national lending library, it seemed vital to the CND that a union catalogue of technical and scientific publications, which would be exhaustive and kept up to date, be available as soon as possible. A mechanized management system for the catalogues is being studied under the direction of the Mechanized Library Board. It will be possible not only the rapid notification and location of publications but also the management of a really effective inter-library loans service, which will be especially useful for foreign technical and scientific publications.

3. PREPARATION OF THE RESOURCES NECESSARY TO THE WORKING OF THE NETWORK

3.1. Development and compatibility of the documentary languages

The working of the network can be ensured only if the participants use compatible languages

Thus, the CND has supported the construction of a considerable number of thesauri by fields *

Moreover, it has decided to carry on a study of macro-thesauri in science and technology, previously begun in the 'linguistic tools' group of the CND. It is a research operation that should lead to the creation of a tool utilisable for :

- . the construction of new thesauri by fields
- . exchanges between fields
- . indexing at the library level or at the level of general information services (such as the 'guidance centre').

The CND, in order to ensure maximum compatibility between the thesauri by fields, has set up a 'thesauri coordinating committee' to maintain contact with those responsible for the thesauri that are being constructed, and to see that some common design and composition rules are observed. 'Recommendations for the construction of thesauri by fields' have been written, and approved by the 'linguistic tools' group, and are ready for wide distribution.

The coordinating committee is continuing its work : it will go on advising centres undertaking new thesauri, helping them with its experience. It will set up, in collaboration with the various people responsible for thesauri and the AFNOR, a group of recommendations concerning the presentation of the French thesauri constructed with the help of the DGRST.

* See Appendix 3

The collection of these publications, in conformity with the recommendations of the thesaurus coordinating committee, should give a controlled and structured terminology that should be used as a basis for the construction of future interdisciplinary thesauri.

3.2. Study of users' needs

-Evaluation and synthesis centres

Very often, when one speaks of scientific and technical information, only the documentary function is considered, i.e. the provision of bibliographical references.

Now, it is increasingly obvious that this function, though necessary, satisfies the needs of only a small group of users. However, all users wish to have at their disposal directly utilizable information which they can trust.

A considerable effort must be made so that the information evaluation and synthesis function be better performed.

An inquiry has been made to specialized industrial centres and to industrial managers, in order to determine users' needs more accurately, and to propose methods of action to the BNIST.

The results of this inquiry that has been begun under the auspices of the CND will be communicated to the BNIST in the very near future.

3.3. Training

In order that scientific and technical information be utilizable to the full, it is necessary to undertake a twofold operation :

- . the training of specialists
- . the training of users

Specialists : The problems are numerous. They particularly concern :

- . the desired levels and specializations ;
- . the training programmes corresponding to these different levels ;
- . the harmonization of these programmes ;
- . the number of people to be trained ;
- . the appointment of teachers ;
- . the retraining of already trained specialists ;
- . the standing of the profession and the recognition of diplomas ;
- . the role of the State, of professional associations and of public utility companies ;

Users

The French engineer, researcher or technician rarely seeks information beyond a narrow circle of people and documents. He does not automatically seek information, and very often does not know where to find it.

It would be necessary, from school and university onwards, to teach pupils and students how to use documents, and to show them their usefulness.

In firms and laboratories, it is hoped to make managers, engineers, researchers and technicians aware of the importance of information, making them participate in the definition of products and in the management of operations.

The centres distributing information should enhance their promotional efforts, making use of all the existing liaison organizations.

The BNIST will have to make a general study of these questions. A working group instructed to identify the best procedures has been created in agreement with the Ministry of Education. This group, which met for the first time in May, will report at the end of the year so that its recommendations may be taken into account in the budgetary proposals of 1975.

This year, the CND has participated in two different operations :

- (a) experts for developing countries : in order to satisfy the UNESCO and UNIDO requests for experts in information science and technology, a working group consisting of experts and representatives of UNESCO, the CILF,* the Ministry of Education, the Ministry of Foreign Affairs and the CND is now investigating the organization in France of a post-university course for students of developing countries to whom scholarships would be granted.
- (b) training of users : a promotional operation undertaken by the ANPT and partly financed by the DGRST is in the course of being carried out, starting from programmes established by the CEDOCAR. Instruction periods are arranged for engineers who wish to be trained in documentation methods and for those who would like to become, in their own companies, organizers and teachers.

3.4. Research

Every information specialist knows only too well the limitations of the systems he has constructed or is using, and must feel deeply the necessity of enhancing the research effort in information science and technology.

* Conseil International de la Langue Française

Few studies were made in 1972 . It was first necessary to determine the particular areas in which research can and must be undertaken. This is why a working group has just been created by the BNIST. It will have to draw up a research programme and establish priorities. It will particularly study the possibilities of developing researches concerning :

information and its users (methods of analysis of users'needs, restraints on the circulation of information)

information economy, and evaluation of systems (investigation of all the parameters enabling evaluation of systems, determination of cost/benefit ratio of some important operations)

repackaging of information and the methods used to do it at a low price

information technology applied to scientific and technical information processing

So far, the DGRST has contributed financially to the setting up of a methodology for testing the performance of conventional indexing systems and of a method for mechanized translation of technical documents.

4. INTERNATIONAL RELATIONS

While working to establish a national information network, the CND also endeavoured to develop to a maximum the relations of this network with international and inter-governmental organizations.

4.1. EEC

Agriculture

A scheme for a world information system for agricultural science and technology (AGRIS) is being studied within the framework of the FAO.

The sub-group of experts of the EEC thinks it is desirable to create a European organization allowing participation, as soon as possible, in this international system, according to procedures which are still to be determined.

Metallurgy - SDIM

France, having obtained modifications that seemed necessary to her, particularly as regards the thesaurus and the distribution of publications to be used by the different countries within the EEC, has signed a temporary technical agreement according to which the national centres for scientific and technical information of the member countries of the Community undertake, for a period of 3 years, to participate in the work of collection, indexing and storage of the metallurgical literature on the one hand and processing and dissemination of this literature on the other.

A large number of technical and economic problems are still to be settled. The European system will have to be considered as complementing the French metallurgical system that is at present being investigated (cf. 2.3. Metallurgy).

Medicine

Cooperation is expected as regards the data bank concerning medical products ; exchanges concerning medical files will start to take effect in 1973.

Tariffs

Scientific information must be regarded as a valuable but expensive product, and it is desirable to succeed in retrieving eventually at least a part of this cost of production.

A working group has been instructed by the CIDST to analyse the factors that influence prices concerning service provisions as well as the methods used for deriving the tariffs of these services. This group, helped by a French working group studying the same problem within the national framework, has studied specific questions of tariff procedures, carefully examining at the same time the macro-economic aspects. There was unanimous agreement with French proposals for a tariff policy and a tariff harmonization within the Community. A permanent group arising from the previous one will now study the financial and economic problems created by the setting up of documentary systems.

4.2. United States

A cooperative agreement was signed on 20th June between the CAS and the CNIC. The CNIC will carry out an experimental programme based on the use of the CAS structure file (cf. 2.3. Chemistry).

4.3. International organizations

ISO. Rules for the creation of monolingual thesauri have been established by the ISO. They were used as a basis for the recommendations for the construction of thesauri in French put forward by the coordinating committee of thesauri by fields. (cf. 3.1.)

Rules for the construction of multilingual thesauri are now being studied.

FID. The CND has thought it essential to strengthen and extend the French representation on the various FID committees, including in particular participation in the committee on 'Training of information specialists'.

- CIDST Committee for Scientific and Technical Information and Documentation (subordinate to the PREST Group (Scientific and Technical Research Policy of the EEC))

ISDS. Within the framework of UNISIST, the International Centre for the recording of periodicals (ISDS) has been established in France at the National Library. An efficient cooperation is being set up with the United States, the United Kingdom, the USSR, and Germany. The publication of a first catalogue is foreseen for 1974.

UNISIST. The UNISIST Steering Committee was created in 1972. France was appointed a member of it. The UNESCO Director-General was empowered to create an Advisory Committee to give opinions on the planning and execution of programmes.

A permanent UNISIST secretariat is to be created within the Documentation, Library and Archives Department of UNESCC.

ICSU-AB. France joined the ICSU-AB as a national member in 1972. The CNRS and the BRGM were already members through their documentation centres. The ICSU-AB plays a very important part in the development of international cooperation as regards the constitution of documentary holdings. The input plan, intended to reduce to a minimum the duplication between services and to enable them to create data bases as complete as possible, must be followed and encouraged. In the same way, the ICSU-AB, in association with UNISIST, participated in the writing of a Reference Manual for bibliographic descriptions and the taking into account of cataloguing data, a necessary step in the solving of the general problem of system interconnections.

CODATA. The third international conference of the Committee on Data for Science and Technology (CODATA) was held in France, at Le Creusot, from June 26th to June 30th, 1972. The CND was represented as an observer, showing in this way its interest in questions of the generation, evaluation, selection and dissemination of scientific numerical data.

The necessity for a national organization, to serve in particular as a correspondent of CODATA, has led to consideration of the creation of an association, under the law of 1901, with founder members (CNRS, DRME, DGRST, etc.) and titular members (industries, laboratories), whose statutes are at present being studied.

5. CONCLUSION

The last year of existence of the National Committee of Documentation can be considered to have been very effective, particularly thanks to the work of the 'Scientific Information' Coordinated Complementary Action Committee of the DGRST, which met nearly every fortnight, and acted as a permanent element of guidance and coordination in the field of information. From its first meetings, the CND felt the necessity of such a means of action, and this need partly led to the creation of the BNIST.

The action taken in 1972 by the CND-DGRST will have made it possible to avoid any discontinuity between the work of the CND and that of its successor, the BNIST. The BNIST inherits, from the start, all the essential means necessary to its work, and finds its fundamental task of organization of the national documentation network well begun.

Beginning a large-scale national action, with some delay in comparison with most of the advanced countries, France should be able quickly to play its proper role in the field of efficient and rational management of scientific and technical information. This will need the cooperation of the authorities in ensuring their continued and adequate financial and intellectual support, which they alone can give until the time when users finally realize the categorical necessity of taking over this support in their turn.

APPENDIX 1

1972 : 'Scientific and Technical Information and Documentation'
Coordinated Complementary Action Committee of the DGRST

Membership

<u>Chairman</u> :	Mme FUNCK	Institut Français du Pétrole
<u>Members</u> :	Mme CADOUX	Maison des Sciences de l'Homme
	M. CITTI	Laboratoire National d'Essais du CNAM
	(alternate :	
	Mme DAVID)	Institut Français des Combustibles et de l'Energie
	M. DELORME	Ministère du Développement Industriel et Scientifique
	M. GUILLOUX	CEA
	M. MICHEL	
	M. d'OLIER	Centre de Documentation du CNRS
	(alternate :	
	Mme DUSOULIER)	Centre de Documentation du CNRS
	M. POINDRON	Direction des Bibliothèques
	M. RENAUD	Centre de Documentation de l'Armement
	M. SPOHN	EDF
	(alternate :	
	Mme ASQUIEDGE)	EDF
	Mme ZERAFFA	Hôpital Bicêtre

APPENDIX 3

OPERATIONS CARRIED OUT IN 1972

Funds assigned in 1971 and 1972.....	4 700 000 F.
Total of the operations carried out in 1971....	733 730 F.
Total of the operations carried out in 1972....	3 676 121 F.
Total 1971 - 1972	4 409 851 F.
Balance in hand	290 149 F.

Distribution of the funds committed

Area 1

'Development and coordination of scientific and technical information'

	Programme 1	Programme 2	Number of:	Total	Amount
	Descriptive network	Access network	contracts		carried forward
Theme 1	Networks by fields		7	1 130 660	
Elements		Regional	2	552 700	
of the	National	branches	1	397 000	
network	organization				
	(guidance centre)	Libraries	2	275 000	
			12	2 355 360	2 355 360
Theme 2	Thesauri		8	624 890	
Linguistic	Coordination and				
tools	macrothesauri		3	271 000	
	Others (ITF				
	multilingual				
	dictionary)		2	85 850	
			13	981 740	981 740
Theme 3	Recording of sources		2	58 621	
Studies	Synthesis centres		1	13 500	
Investi-	Methodological				
gations	study		1	91 500	
	Others (CERI)		1	175 400	
			5	339 021	339 021
TOTAL			30		3 676 121

2.1.3. NATURE OF THE U.S. NATIONAL MEMBERSHIP TO ICSU AB
AND THE POSITIONS OF THE COMMUNITY IT REPRESENTS

By J.J. LLOYD
U.S.A. Representative

The report on U.S. activities is actually in three parts : this brief statement, a report to be given by Mary Corning on the role of U.S. Government in information activities, and a report on the National Federation of Abstracting and Indexing services. The present report, to avoid duplication, will focus on the nature of the U.S. National Membership to ICSU AB, and the positions of the community it represents.

The United States National Membership to ICSU AB is administrated by the National Academy of Sciences, but represents a community of interest in information activities. The community is comprised of the not-for-profit, or society services; the for profit, or private commercial services; and the governmental agency services. The National Membership provides a unique and important forum in the United States for the periodic assemblage of representatives of the three groups. Meetings are convened, by the Academy, to consider the common interest in international activities, the effect of those activities on the national groups, and the position that the forum -adopted by consensus- would like to have expressed through ICSU AB. Those positions are transmitted to the Board by the United States Representative.

The Academy's guardianship of national representation is advised by an ad hoc committee consisting of Scott Adams, Jeffrey Norton, and Phyllis Parkins. A permanent sub-committee will be named from a larger Advisory Committee on International Nongovernmental Scientific and Technical Organizations and Programs, that has been approved by the Academy's Governing Board and is now in the formulative stage. The sub-committee will constitute the U.S. National Committee for ICSU AB.

A meeting was called of the ad hoc committee and the representatives of all the indicated community interests, by the Academy, on June 11, 1973, at which many subjects were discussed some of which will be presented and discussed at appropriate points of the ICSU AB meeting agenda. The general sense of the discussions in two areas is here reported.

UNISIST:

Unhappiness was expressed over the delay in naming a Steering Committee and an Advisory Committee, and consequently in calling meetings of these bodies. Perhaps as a measure of the lack of these controls there has been a tendency to engage in many activities, some of which appear to overlap or duplicate the work of other organizations, and many are being affected by the attenuation of effort, energy, and money.

The U.S. National Member hopes that credit and recognition will be given to ICSU AB for those activities in which the Board has either participated or has initiated. Furthermore, UNISIST is urged to avail itself of the ICSU AB working group activities, of the experience and expertise of the Board membership, and to name official ICSU AB representatives (in addition to individual staff experts of member services) to appropriate UNISIST working groups.

At the same time, ICSU AB is encouraged to continue its own efforts in areas of particular importance to the abstracting and indexing community. Results of such efforts should be fed into future UNISIST activities, wherever they are appropriate.

The United States information community in the private sector has expressed the need for a focal point within the States for continuing information on UNISIST programs and activities, and for an exchange of opinion channel. It has been suggested that the new Academy Committee and its subcommittee on ICSU AB may provide such a focus.

ISDS :

The U.S. National Committee concurs with the concern of NFAIS members with the apparent conflict between ISDS guidelines and the priorities economically established by the U.S. National Center that may make it impossible for the American abstracting and indexing services to incorporate ISSN's into their bibliographic records.

The Committee is aware that the problem of the U.S. Center is not unique, but reflects similar problems in other centers. It laments, the slowness however, with which the ISDS is moving, and the entire situation gives cause to wonder if the decentralized structure is viable.

The Committee also has general concerns with the economics of information, the overlapping areas of coverage, the emergence of mission-oriented services which should draw upon the discipline data banks, and development of the areas of cooperation of primary and secondary publishing which were the subject of the pre-meeting conference here in London.

An information activity of the United States in which this group would probably be interested is the recently completed trip (less than a week ago) of an 8-man team representing government, private for profit, and private not for profit services to the Soviet Union. The tour was an outcome of the US-USSR Agreement on Cooperation in Science and Technology and involved a study of Soviet information systems in Moscow, Novosibirsk, Yerevan, and Kiev. (At least one familiar face is missing from our meeting, that of Dale Baker, because he was part of that group.) A return visit is being scheduled for Soviet information scientists who will visit the information facilities of the United States in the near future.

2.2. REPORTS FROM MEMBER UNIONS

2.2.1.

INTERNATIONAL UNION OF CRYSTALLOGRAPHY

Information Services 1972-73

By A.J.C. Wilson
Alternate IUCr representative

The International Union of Crystallography held its Ninth General Assembly and International Congress in Kyoto, Japan, from 26 August to 7 September 1972. Naturally the Congress was mainly concerned with scientific advances, but there was a considerable amount of time and effort devoted to development in the Union's information services. The Short Structural Paper format, described in the report of the Union for 1971-1972 (ICSU AB Full Board Meeting, 1972, p.77), was generally welcomed, and papers in this style are now a regular feature in Acta Crystallographica, section B. During the Congress open meetings were held on the Function and Future of the Journals of the Union; on Data Storage, Search, Retrieval and Publication; on Powder Data; on the International Tables for Crystallography; and on Structure Reports. In addition to these open meetings, at which crystallographers in general could praise or criticize the services offered to them, the relevant commissions met frequently in closed sessions. The Commission on Journals agreed in principle to take part in the Current Physics Advanced Abstracts scheme of the American Institute of Physics, and participation has now begun.

Perhaps the most interesting development from the ICSU AB point of view was the setting up of a Working Party on Information Services, with the following terms of reference :

1. To evaluate the present situation in relation to needs in IUCr information services (e.g. publication, collection, storage, retrieval, critical appraisal and dissemination of data and other information pertinent to crystallography).
2. To project these needs into the future and to determine how the IUCr, primarily through its Commissions, should best meet them.
3. To make specific proposals for needed innovations and extensions of services in this field. In these proposals, feasibility on economic, manpower and cost bases are to be specifically considered.
4. To report to the Executive Committee at its meetings in 1973 and 1974 and prepare a full report for circulation before and submission at the Tenth General Assembly in 1975.

The Chairman is Professor S.E. Rasmussen, General Secretary of the Union. In addition to this general IUCr Working Party, the Commission on Journals set up two internal Working Groups, one on Production Methods, and the other on Publication of Structures.

Aside from delays resulting from trade disputes, the journals of the Union have appeared as planned, and deliveries to North America have been speeded up by the use of air freight (since January 1973). The other information services of the International Union of Crystallography have continued along the lines already described (see the reports of the ICSU AB Full Board meetings: 1970, pp. 171-175 ; 1971, pp. 69-70 ; 1972, pp. 77-78). The following publications have appeared during the year under review :

1. Structure Reports. Volume 29 for 1964. Utrecht : Oosthoek, 1972
2. Molecular Structures and Dimensions. Volume 4. Bibliography 1971-1972. Organic and Organometallic Crystal Structures. Utrecht : Oosthoek, 1973.
3. Molecular Structures and Dimensions. Volume A1. Interatomic distances 1960-1965. Organic and Organometallic Crystal Structures Utrecht : Oosthoek, 1973. (This contains numerical data on bond lengths, bond angles and torsion angles, for about 1 300 structures and analysed by X-ray and neutron diffraction. The entries are illustrated by stereoscopic diagrams and chemical formulae).
4. Coherent neutron scattering amplitudes. (Acta Crystallographica, A28, 357-358, 1972.) (Revision of the list published in 1969)
5. Notes for Authors. Acta Crystallographica, A29, pp.97-108 . B29, pp. 145 ; 156 ; Journal of Applied Crystallography, 6, pp. 46-57 ; all 1973.

In addition, the Commission on International Tables has circulated pilot issues of the first four parts (direct space, reciprocal space, Patterson data, and synoptic tables) of a new edition. After comments and criticisms have been received from crystallographers using the pilot issues, the Commission will proceed to publication in the usual sense of the word.

2.2.2. INTERNATIONAL UNION OF GEOLOGICAL SCIENCES
COMMITTEE ON GEOLOGICAL DOCUMENTATION

by L. DELBOS

IUGS Representative

President, IUGS Committee on Documentation

Since the last ICSU AB annual Full Board meeting in Ustaoset, the IUGS Committee on Documentation has presented in Montreal at the International Geological Congress, the multilingual "Tectonic" Thesaurus prepared by the Joint ICSU AB/IUGS Working Group.

During this Congress important decisions concerning the documentation in Geological Sciences were taken.

- The thesaurus submitted was considered as a test and a methodological approach. The Committee entrusted the Automation Board to carry on the work to prepare and realise a comprehensive thesaurus of Earth Sciences.
- The Glossary of Geology (2nd edition, 1972) published by the American Geological Institute was chosen as the basic working document.
- Each participant will chose in this glossary and translate into his own language the terms he considers as descriptors and synonyms.

A preliminary work on the beginning of the Glossary, carried out by the American Geological Institute, the Geological Survey of Canada, the Bundesanstalt für Bodenforschung and the Bureau de Recherches Géologiques et Minières, was computerized by the BfB. in Hanover.

The Documentation Committee met in Moscow from May 28th to June 2nd, 1973. The major achievements of this meeting are :

- (a) All the participants expressed their willingness to establish an international collaboration and for this purpose, to carry out a multilingual thesaurus in Geology.
- (b) The creation of a joint ICSU AB/IUGS Working Group on a multilingual geological thesaurus was approved. This **in agreement** with UNISIST recommendation.
- (c) The methodology defined in Montreal was accepted, and the participants agreed to supply their first lists before January 1st, 1974.
- (d) The five main following languages : English, French, German, Russian, Spanish were considered by the Committee as essential to the realization of this thesaurus. Though, taking account of the already active contribution of Czech, Danish and Italian geologists, and its importance for the scientific community, the Committee expressed their desire that these geologists contribute to this work.
- (e) The next meeting of the Working Group will be held in Hanover at the beginning of the Spring in 1974.
- (f) The following Organizations participated in the Moscow meeting :
 - American Geological Institute (J.J. LLOYD)
 - Bureau de Recherches Géologiques et Minières (L. DELBOS, J. GRAVESTEIJN)
 - Bundesanstalt für Bodenforschung (H. GLASHOFF)
 - Geofond Praha (J. HRUSKA)
 - Viniti-Moscow (E. ZAKHAROV)

The Russian delegation was composed of representatives from the documentation centres belonging to the Academy of Sciences and the Ministry for Geology (VINITI, VSEGEI, VIEMS, VNIIMORGEO).

The Minutes of the Moscow meeting could be supplied to all concerned by the IUGS Documentation Committee.

2.2.3. INFORMATION ACTIVITIES OF IUPAC

By J.W. BARRETT
IUPAC Representative

INTRODUCTION

We regret the lack of a Report in 1972 due to the unfortunate illness of Dr. B. Riegel. This Report therefore covers the period 1971 and 1972.

NOMENCLATURE FOR CHEMISTRY - PROCEDURES

IUPAC has been actively concerned from its inception with nomenclature for chemistry and has a number of permanent Commissions whose nomenclature recommendations lead to the establishment of international usage of identical nomenclature over a very wide range of subject areas. Recommendations are published in tentative form as Appendices to the Information Bulletin and subscribers receive all Appendices automatically and free of charge on publication. Following a minimum period of 8 months for the receipt of comments, the recommendations are reviewed and revised by the relevant Commission. If there is no basic disagreement the recommendations, on the approval of Council, are published in definitive form in the IUPAC journal, Pure & Applied Chemistry, from which hard cover reprints are made available.

Definitive Nomenclature Rules

Outstanding during the period has been the publication of new editions of comprehensive definitive nomenclature manuals covering a majority of the subject, namely :

Manual of Symbols and Terminology for Physiochemical Quantities and Units - Known as the "Green Book"

Nomenclature of Organic Chemistry, Sections A, B, and C
- Known as the "Blue Book"

Nomenclature of Inorganic Chemistry
- Known as the "Red Book"

Part I of Appendix II to the Green Book on "Definitions, Terminology and Symbols in Colloid and Surface Chemistry" was published in Pure & Applied Chemistry in 1972 and more appendices in specialised fields are planned.

"Definitive Rules for Nomenclature of Steroids" was published in Pure & Applied Chemistry in 1972 as a result of the work of the IUPAC-IUB Commission on Biochemical Nomenclature.

The many definitive recommendations for analytical chemistry remain scattered, but a complete compendium will probably be issued in 1974 as a result of work now started. New definitive recommendations were :

Part I on General Atomic Emission Spectroscopy of Nomenclature, Symbols, Units and their usage in Spectrochemical Analysis ; NMR Data for publication in Chemical Journals ; Ion Exchange Nomenclature ; Nomenclature for Liquid-Liquid Distribution.

Tentative Nomenclature Rules

Twenty-one tentative recommendations have been issued as Appendices to the Information Bulletin in 1971 and 72. A substantial number of these are expected to be issued in definitive form in 1973.

Nomenclature Problems within Chemistry

It has been recognised that more attention must be given through the Interdivisional Committee on Nomenclature and Symbols to the problem of compatibility of nomenclature systems between different parts of chemistry and with other disciplines, notably biology and physics. Collaboration in various ways has continued with IUB and IUPAP. The joint IUPAC-IUB Commission on Biochemical Nomenclature has been particularly fruitful.

Computer handling of chemical information brings problems and opportunities. Certainly, the demand for exact unambiguous nomenclature is greatly increased and, at the same time, computer generation of nomenclature becomes feasible. The Interdivisional Committee on Machine Documentation in the Chemical Field was set up in 1969 to examine and report on both aspects, but progress has been slow to date.

Publications

The publications of IUPAC through its journal Pure & Applied Chemistry, its Information Bulletins and miscellaneous publications have been considerable and yearly lists of these are now published in the Information Bulletin, specifically Information Bulletin Numbers 42/43 July 1972, Information Bulletin Number 45 May 1973.

An important innovation has been the establishment of a system for publicity of IUPAC reports in national chemical journals.

SESSION 3 :

ROUND TABLE : ROLE OF GOVERNMENTS IN INFORMATION
TRANSFER

Chairman : D.H. BARLOW

3.1. THE ROLE OF THE UNITED STATES GOVERNMENT
IN INFORMATION TRANSFER *

M. E. Corning **
Assistant Director for
International Programs
U.S. National Library of Medicine

INTRODUCTION

In discussing "The Role of the United States Government in Information Transfer" the following parameters must be taken into consideration. It is impossible to describe the role of the government "in vacuo" or as an isolated entity. There are inter-relationships with the academic, private, industrial and professional sectors which must be considered as part of the whole. Furthermore, the nature and extent of government involvement will depend on a number of factors: the structure of government; planned and unplanned developments within the history of government; and the status of science — both funding and areas of emphasis in research and development.

My comments are devoted to scientific and technical information; and I define it as knowledge or data derived from research and development or necessary for the conduct of research and development.*** The topic assigned to the panelists included the word "transfer." This implies an action complete from an originating source to a receiver. We like to assume that the activities which we conduct in communications do indeed lead not only to a transfer of information but its application; this, however, is not automatically accomplished.

* This is a summary of a slide presentation; hence, all of the illustrative material could not be reproduced in this written version.

** The author is indebted to the U.S. National Science Foundation for the provision of statistical data, both published and in press. Published data are from U.S. National Science Foundation, "Federal Funds for Research, Development and Other Scientific Activities, Fiscal Years 1971, 1972, 1973," NSF 72-317, Volume XXI.

*** This definition is essentially that used by the U.S. National Science Foundation in the collection of statistical data.

I shall not dwell on the philosophical and conceptual pros and cons of the validity and value of government involvement. Instead, I will present facts and data in order to give you a realistic understanding of overall U.S. Federal responsibilities and activities; the relationship and dependence of science information upon research and development; the policy, funding, and operational aspects of Federal scientific and technical information programs; and future trends.

In order to understand Federal scientific information activities, one needs background on: the dependence of scientific information on science; the relationship of science and the Government; and the structure of Government itself.

STRUCTURE OF THE FEDERAL GOVERNMENT

The governmental structure of the United States consists of Federal, State and Local levels. Distinct responsibilities belong to each level of the Government and I shall describe only the Federal. The Constitution of the United States, ratified in 1787, and amended subsequently, sets forth the primary organization and structure of the U.S. Federal Government. There is a separation of legislative, executive, and judicial powers, but an interaction of all three. Legislative power is vested in the Congress; executive in the Presidency; and judicial in the Supreme Courts.

SCIENCE AND GOVERNMENT

Historically, science and government are interwoven, both within the Legislative and Executive Branches of our Government. The United States, from its earliest days, looked primarily to the European scene for advances in knowledge and their application. In the Constitution of the United States, there is explicit reference to science

---"To promote the progress of science and the useful arts, by securing for limited times to authors and inventors, the exclusive right to their respective writings and discoveries."

The Constitution gave the Congress responsibility to provide for defense, commerce, weights and measures, navigation and navigable waters, post office and post roads, and the general welfare of the United States. Accordingly, the Congress provided legislation which created departments and agencies in the Executive Branch of Government. We refer to these agencies as "mission agencies," with their broad objectives of agriculture, geology, standards,

aeronautics, health, commerce, and atomic energy. Congress included within these departments the authority, specific or implied, for the conduct of scientific activity, as well as making grants or contracts to other institutions (governmental or non-governmental) in order to further broad agency goals.

In contrast to science being one element in a broader agency program, it is the exclusive objective of one Federal executive agency established in 1950, the National Science Foundation (NSF). The NSF furthers the progress of science by supporting basic research and education in the sciences and pursuing a national science policy.

During the 1950's, there was a re-appraisal of the U.S. scientific and technological effort, accompanied by an examination of scientific and technical communications. These were the subject of a number of committees and special task groups of both the Congressional and Executive Branches of Government.

In 1957, impetus was given to the role of Federal science and the importance of research and development. This was illustrated not only by increased operational activities within the Federal agencies, but in the establishment of a policy structure (Figure 1). A Science Advisor to the President was appointed, and an existing Science Advisory Committee was elevated to become the President's Science Advisory Committee (PSAC). The latter, appointed by the President, consisted of scientists and engineers drawn from the academic, industrial, and private sectors. Based on a recommendation from PSAC, the Federal Council for Science and Technology (FCST) was established in 1959. This was a policy group of government officials. Thus, advice to the President was to be given from both non-governmental (PSAC) and governmental sources (FCST). In 1962, the Office of Science and Technology (OST) was created and served in a staff capacity to the President in developing policies and evaluating programs. All three bodies — PSAC, FCST, and OST — were chaired and directed by the President's Science Advisor.

The FCST had a number of coordinating committees, including one on science information (1962), to be renamed in 1964 as the Committee on Scientific and Technical Information (COSATI). This was a recognition of the relationship of scientific and technical information to research and development. It was also an effort to coordinate the various programs of the operating agencies of the Federal Government.

COSATI, during the period 1964-1973, concerned itself with such areas as: operational techniques and systems; information sciences technology; education and training; international programs; management; information analysis and data centers; libraries; legal aspects; and chemical information. COSATI was a forum for information exchange; but it could not enforce common standards or redirect program emphasis within the operating agencies.

Although COSATI tried to bring representatives of the private sector into its deliberations, this was not comparable to having a formal non-federal body representing the private sector. Accordingly, the Office of Science and Technology and the National Science Foundation requested the National Academy of Sciences to appoint such a committee. The Committee on Scientific and Technical Communication (SATCOM) came into being in 1966. SATCOM was concerned with the information activities, policies and relationships within the private sector; and the interactions between Federal and private sectors. Thus, a coordinating mechanism was established for both the Government (COSATI) and private sectors (SATCOM), with the concept of inter-relating. Neither exist as such today. The Federal science advisory and coordinating responsibility formerly served by PSAC, OST, AND FCST was transferred to the National Science Foundation in 1973.

SCIENTIFIC INFORMATION AND SCIENCE

Scientific and technical information is dependent on research and development (R&D), whether one is discussing the generation of information, the dissemination of information, or the application of information. This relationship can be quantified. Let us examine first the Federal Government and Research and Development.

Figure 2 shows the trends in Federal obligations for Research and Development for the period 1963 through 1973. In constant dollars, the FY 1972 Federal R&D obligations are 18 percent below the 1967 high of \$16.5 billion and are approximately the same as 1963.

In current dollars, there has been an upward trend since 1970 in Federal R&D support. Within the total R&D picture for the decade 1963 to 1973, research shows an upward trend in contrast to development. Applied research accounts for most of the dollar increase, although the average annual rate of growth of basic research is somewhat higher. During 1971-73, basic research had an average annual growth rate of almost 11 percent, applied research 8 percent, and development 6 percent.

At the present, Research and Development programs are growing at about the same rate as other Federal programs taken as a whole. However, the Federal R&D expenditures as a share of the total budget have declined from a high of 12.6 in 1965, to an estimated 10 percent in 1973, the lowest ratio since 1959. The ratio of R&D expenditures to the Gross National Product (GNP) has ranged from a high of 2.4 in 1964 to a low of 1.5 in 1972.

The distribution of Federal funds for R&D can be identified in terms of:

1. The Funding Agency (Figure 3)
2. The Performer (Figure 4)
3. The Character of Work (Figure 5)

The Federal Government is the principal source of funding for research and development in the U.S. Of the \$17.8 billion estimated Federal R&D obligations for FY 1973, the Department of Defense accounts for 49 percent; the National Aeronautics and Space Administration, 18 percent; Department of Health, Education, and Welfare, 11 percent; and the Atomic Energy Commission, 8 percent. (Figure 3) However, the Federal Government, as a performer of research and development, accounts for only 26 percent of the funds. The remainder is distributed by grants and contracts to industrial firms (52 percent) and to academic institutions (12 percent). (Figure 4)

Differentiating the character of R&D work performed, 59 percent is for development and 26 percent for applied research and 15 percent for basic research. (Figure 5) The distribution of basic and applied research funds by field illustrates that engineering and life sciences capture 60 percent of the total. (Figure 6)

There is a pattern in basic research different from the overall R&D. The principal funding agencies in basic research are the National Aeronautics and Space Administration, Department of Health, Education, and Welfare, National Science Foundation, Atomic Energy Commission, and Department of Defense, in that order. The academic sector performs 51 percent of Federally supported basic research; and the life and physical sciences account for 65 percent of the monies.

We shall now compare Federal obligations for research and development with those for scientific and technical information (S&TI) for the period 1971-1974. Table I illustrates that the ratio of funding for scientific and

technical information has remained fairly constant over this four-year period; namely, 2.5 percent. Thus, about \$.5 billion is spent by the Federal Government for scientific and technical information. This represents a minimum figure and not the actual or maximum. This is because the statistical data are based on direct Federal S&TI activities, and not those executed under grant or contract or those within a broader program context.

In 1973, 22 agencies reported scientific and technical information activities, but 98 percent of the total dollars was obligated by 12 agencies. The Department of Defense, Department of Health, Education, and Welfare, and the Department of Commerce accounted for about 75 percent of S&TI FY 1973 obligations.

CHARACTER OF FEDERAL S&TI ACTIVITIES

Federal funds for scientific and technical information are expended in four principal ways:

1. Publication and Distribution
2. Documentation, Reference and Information Services
3. Symposia
4. Research and Development

Between 1960 and 1974, Federal obligations for scientific and technical information activities grew more than five times. (Table II; Figure 7) During this period, the principal increase has been for Documentation, Reference and Information Services — accounting for 47.9 percent of the S&TI total for 1973. The share for Publication and Distribution has dropped from 49 percent in 1960 to an estimated 27 percent. Nevertheless, the dollar growth is impressive.

Obligations for the Research and Development category account for 17.7 percent of the 1973 total. This is the most rapid rate of growth of any category between 1960 and 1973, but appears to be leveling off in 1974. Total S&TI obligations in 1974 are expected to be maintained at a level of approximately 2.5 percent of total Federal Research and Development obligations.

Within each of the four major categories of S&TI, one specific activity captures the significant portion of funding; and this has been a consistent pattern throughout the period 1960-1973. In 1973, Publications and Distribution: nine out of ten dollars are allocated for the actual operation and dissemination of publications. (Figure 8) Documentation, Reference, and Information Services: library and reference services account for almost four

out of five dollars. (Figure 9) Symposia and Audiovisual Media: symposia and technical meetings account for three out of five dollars. (Figure 10) All of the monies in Research and Development do in fact go to research and development programs. (Figure 11)

Figures 12 through 15 show the anticipated FY 1974 distribution of Federal funds by agencies in the four S&TI categories. The Department of Defense is prominent in all four, with the highest percentage in three categories: Documentation, Reference and Information; Research and Development in Information Sciences; and Symposia and Audiovisual Media. This includes the role of the Defense Documentation Center and the development of advanced information systems. The National Library of Medicine, the Office of Education Educational Resources Information Center, and the National Institutes of Health are the significant information components of the Department of Health, Education and Welfare. Within the Department of Commerce, these are the Patent Office and the National Technical Information Service.

The National Science Foundation (NSF) should be singled out for special mention. It has been the principal Government agency funding research and education in the basic sciences. Within the NSF, the Office of Science Information Service has provided support to information activities relating to the scientific disciplines. It has expended over \$144 million since its beginning, with primary emphasis on research and development of information systems. The distribution of the monies by discipline is shown in Table III. It reflects in part the readiness of the disciplines to work in this particular area and the size of the field under examination.

There will be some shift in NSF emphasis in the next years to support the development of data systems as distinct from bibliographic systems, and for economic studies and user-support studies.

Agency roles for scientific and technical information vary from the funding role of the NSF to the operational programs of the National Aeronautics and Space Administration, the Atomic Energy Commission, and my own institution, the National Library of Medicine. Thus, if one looks at the "totality" of Federal scientific and technical information, one does not see an integrated whole. There is a range from the NSF and its relationship to the professional scientific societies and their disciplines to mission-oriented agencies and

their operational programs. There has been a fractionation rather than a consolidation of efforts. This trend is identifiable, not only within the governmental but also the non-governmental sectors; and I believe it will continue.

Furthermore, the dependence of S&TI on R&D is real. When new R&D or special interest areas are identified, they will be accompanied by new S&TI activities. The environment, cancer, energy, and social needs are areas in which new information activities are beginning to emerge, both within the governmental and non-governmental sectors.

In contrast to the fractionation of the primary and secondary information services, there is an identifiable effort in cooperation. The three national libraries — The Library of Congress, the National Agricultural Library, and the National Library of Medicine — are developing a National Serials Data Program. This is within a library setting but it does have implications for information transfer. It also leads me to use an illustrative example of Federal activities in information transfer, my own institution, the National Library of Medicine.

THE NATIONAL LIBRARY OF MEDICINE (NLM)

I cite the Library, not because it is my own institution, but because it is a specialized Federal Agency; a non-conventional library which combines funding programs with operational service programs. It is a national resource; it has a national operating network; and in exercising its functions, it collaborates very closely with the professional user community it serves.

Historically, over 100 years ago the Director of the National Library of Medicine (then called the Library of the Office of the Surgeon General of the Army) concluded that the biomedical literature would not be useful unless there were a subject access to it. We maintain that philosophy today — only the size of the task has increased and the technique has changed from hand to computers.

The Library has a number of functions which make it unique. It was given a Congressional Mandate to develop a National Biomedical Communications Network. The components of this total network are libraries; specialized information services; specialized educational services; audiovisual, data processing and transmission facilities. I shall describe those aspects of this network which are already operational.

The Library's computer-based information storage and retrieval system, MEDLARS, became operational in 1964. This system has two primary functions: (1) to prepare publications, and (2) to respond to requests of the individual. The first function has resulted in a monthly index to the world's biomedical literature, INDEX MEDICUS (IM), and 23 specialized bibliographies developed in cooperation with peer groups. (Figure 16) Two thousand three hundred journals, selected from the world's biomedical literature, are indexed by individuals expert in both subject and language. Approximately 48 percent of the material in the IM 1.8 million citation data base is in non-English language. There are 33 languages represented in the 2,300 journals which originate from 66 countries.

We have now moved from a system of responding to individual requests by batch processing and mail transmittal to an on-line time-shared system. This is called MEDLINE (MEDLARS-on-line). There are currently 200 institutions in the United States which have terminals connected to our computer directly by a telephone network to obtain the needed information immediately. These institutions form part of a national biomedical communications network. (Figure 17)

There are presently ten Regional Medical Libraries in the United States (plus the National Library of Medicine, which also serves as one for a specified geographic area) which form nodes in this national biomedical communications network. (Figure 18) These libraries do not belong to the NLM, but receive funds from the NLM to enlarge the nature and scope of their services to a broader geographic area. Thus, local libraries in the United States first make their requests to the regional libraries. If the latter cannot respond, they come to us for service. The communications network which we have established and which is currently the mechanism for the MEDLINE system, will also be used for other data bases such as TOXLINE (a toxicology information service); CATLINE (a data base which contains catalog information of the monographs and new journals acquired by the NLM since 1965); and SERLINE (a locator data base which indicates the holdings of 115 libraries for approximately 5000 journals).

The Library also has an audiovisual component (the National Medical Audiovisual Center) which is concerned with the collection and dissemination of audiovisual materials. It works very closely with the professional specialty groups in the development of multi-media packages, which are then

tested within the medical education setting, both to determine whether they can improve the quality of education or enhance the progress of medical education.

Approximately 30 percent of the NLM budget is annually provided to support non-governmental health-related organizations and medical libraries. The mechanism of grants is used in order to strengthen medical library training, research, resources, collection, regional library activities and expanded services.

Direct services provided by the NLM to the professional health community include annually over 150,000 computer services, 25,000 reference services, 60,000 motion picture loans, 130,000 interlibrary loans and photocopies, specialized publications, and 23 recurring bibliographies in specific subject areas.

The Library continues to explore the use of technology for improving communications. A satellite experiment has been under way in Alaska where the terrain and weather conditions often prevent any form of communication between isolated and urban areas. Thus, the satellite is the only mechanism which can transmit information. This has been used to connect rural health aides to physicians in hospitals. (Figure 19) Using this technique, emergency information has been provided to health aides, which has enabled them to literally save three lives.

Furthermore, the Library has been sponsoring two-way interactive television which brings medical school classrooms and personnel in the small community hospital into contact. Experimental projects are also under way for the use of cable television. These are pilot efforts to evaluate the use of incorporating cable TV into health care and education programs.

Computer-aided medical instruction is another area being evaluated, using the communications network developed for MEDLINE.

Internationally, the Library has a number of programs; but I shall mention only the eight quid-pro-quo agreements relating to our computer system, MEDLARS. These agreements were reviewed last year by an International Advisory MEDLARS Policy Group representing the participating countries and the NLM. The group reaffirmed the value of both the bilateral mechanism and the quid-pro-quo character of these agreements. Under these agreements, the NLM provides magnetic tapes, technical documentation, and training. The

participating country sends people to the NLM for training, establishes a facility for providing information services to the professional medical community in its country, and provides intellectual indexing input into the data base at the NLM. These arrangements enable a participating country to have access to a highly specialized system by providing intellectual input to the MEDLARS data base. Figure 20 shows the operational periods for the eight Centers. During 1967-1970, France and Germany were providing services, but using the computer processing facilities of the United Kingdom and Sweden.

The NLM has cooperating programs with other Federal agencies and also has projects in cooperation with some of the professional abstracting services represented within the ICSU family; specifically, Chemical Abstracts Service and Biosciences Information Service of Biological Abstracts.

NLM strives to advance biomedical research, education and practice by the utilization of more effective communication techniques which result in services and products which are both timely and accessible. In the execution of these programs, the NLM collaborates with both the medical library community and the medical health communities we serve. They participate in our development of new products and services by providing critiques which examine both the substance and the modality. Accordingly, when we initiate a new product or service, we know it is needed, wanted, and will be used. The NLM does not utilize technology for the sake of using technology, but rather to respond to the needs of the professional user community.

SUMMARY

Data and facts have been presented to describe: the structure of the U.S. Federal Government; the relationship of Government and science; the dependence of science information on the conduct of science; policy, funding, and operational aspects of Federal science information programs; the National Library of Medicine as an illustrative example of a Federal agency; and future trends.

It can be concluded that there is great variety and variation in Federal programs and there is considerable interaction with academic, private, industrial and professional sectors. Although the Federal role cannot be characterized as a standardized uniform coherent entity, it is significant and far reaching in its impact.

FIGURE 1

SCIENCE POLICY STRUCTURE
EXECUTIVE BRANCH

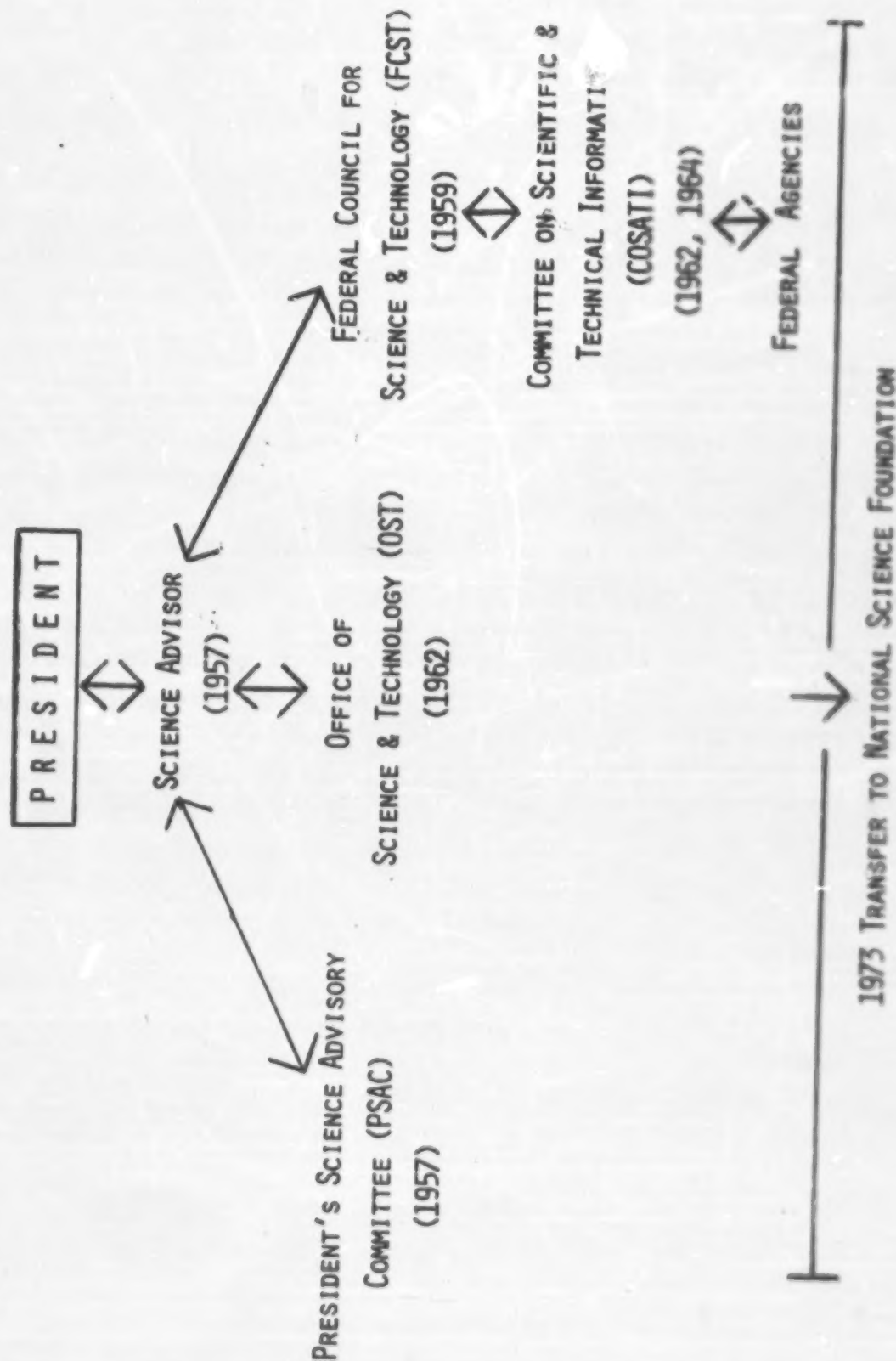
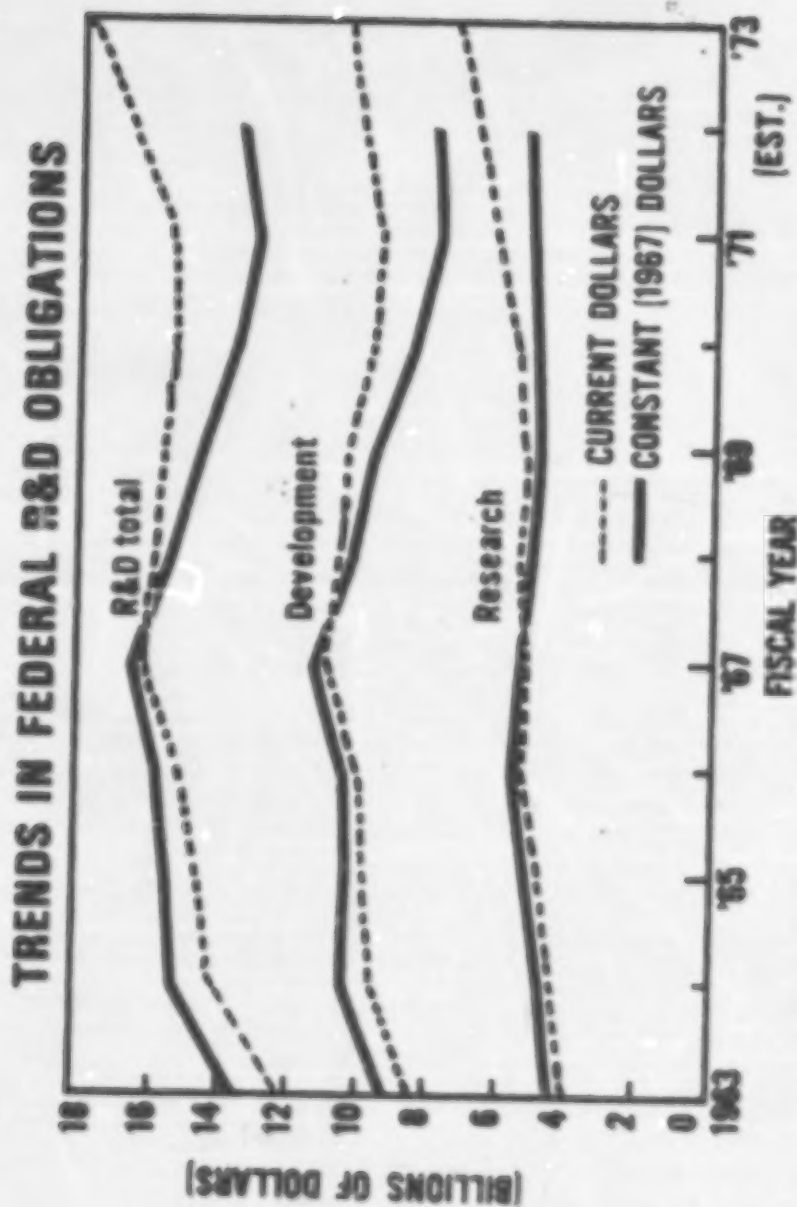


FIGURE 2

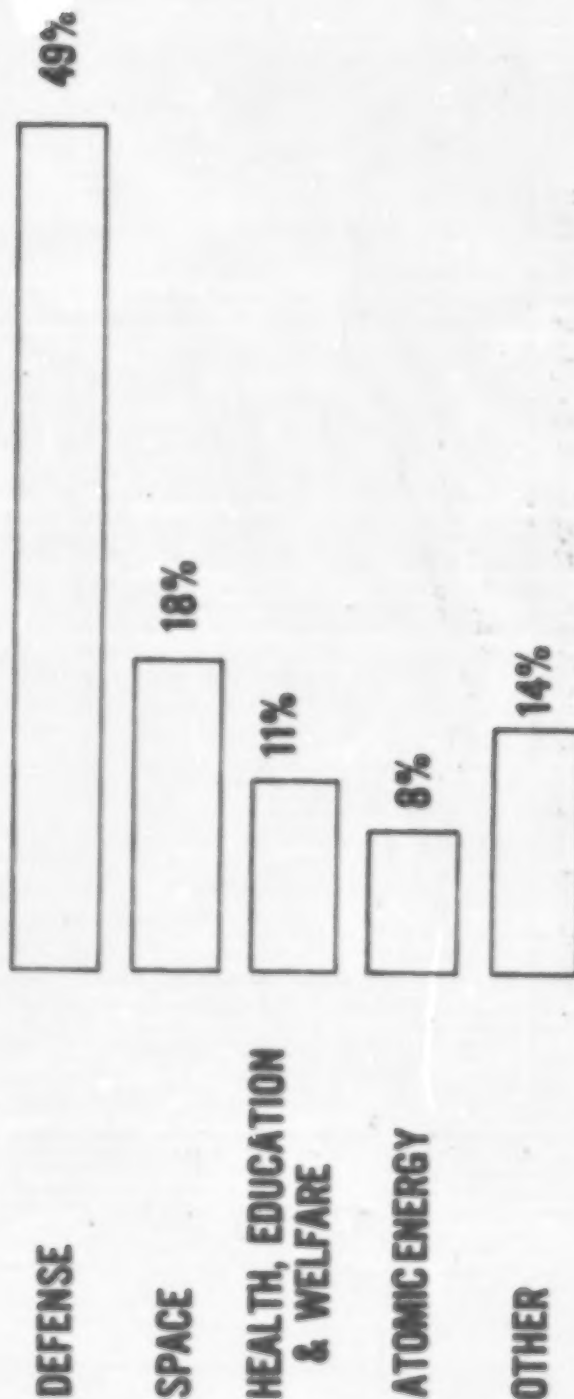


Source: National Science Foundation

FIGURE 3

DISTRIBUTION OF FEDERAL OBLIGATIONS FOR RESEARCH AND DEVELOPMENT, FY 1973 (est)

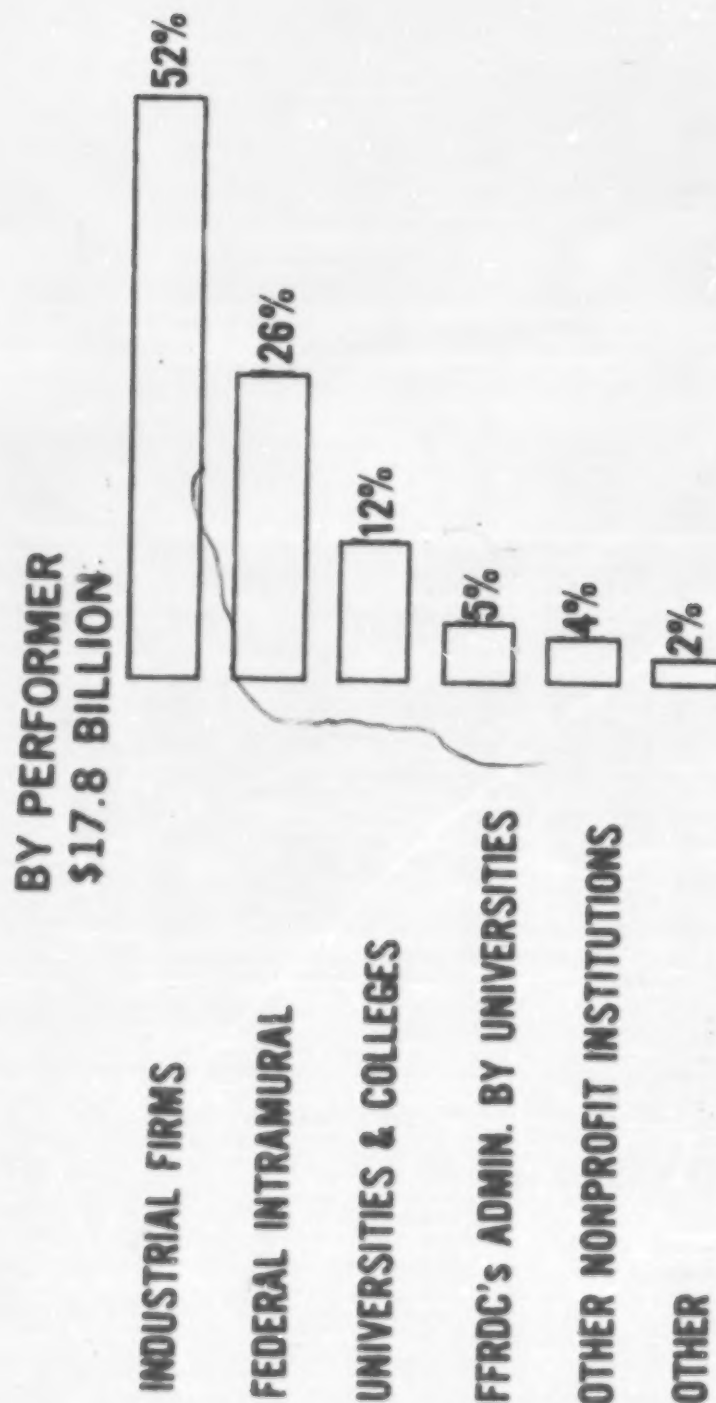
BY AGENCY
\$17.8 BILLION



Source: National Science Foundation

FIGURE 4

DISTRIBUTION OF FEDERAL OBLIGATIONS FOR RESEARCH AND DEVELOPMENT, FY 1973 (est)



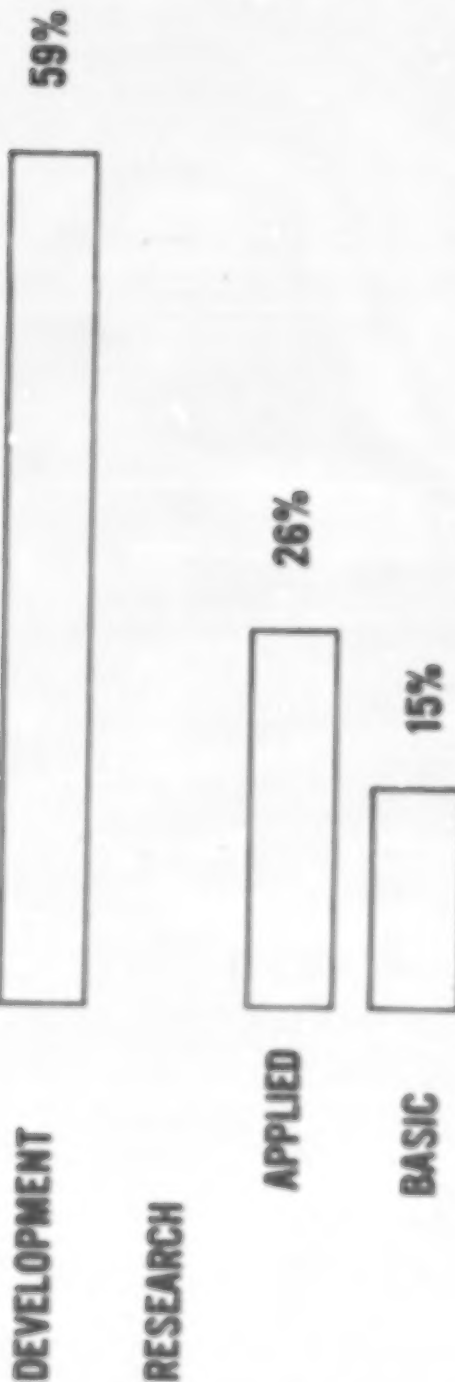
Source: National Science Foundation

FIGURE 5

DISTRIBUTION OF FEDERAL OBLIGATIONS FOR RESEARCH AND DEVELOPMENT

FY 1973 (est)

BY CHARACTER OF WORK
\$17.8 BILLION



Source: National Science Foundation

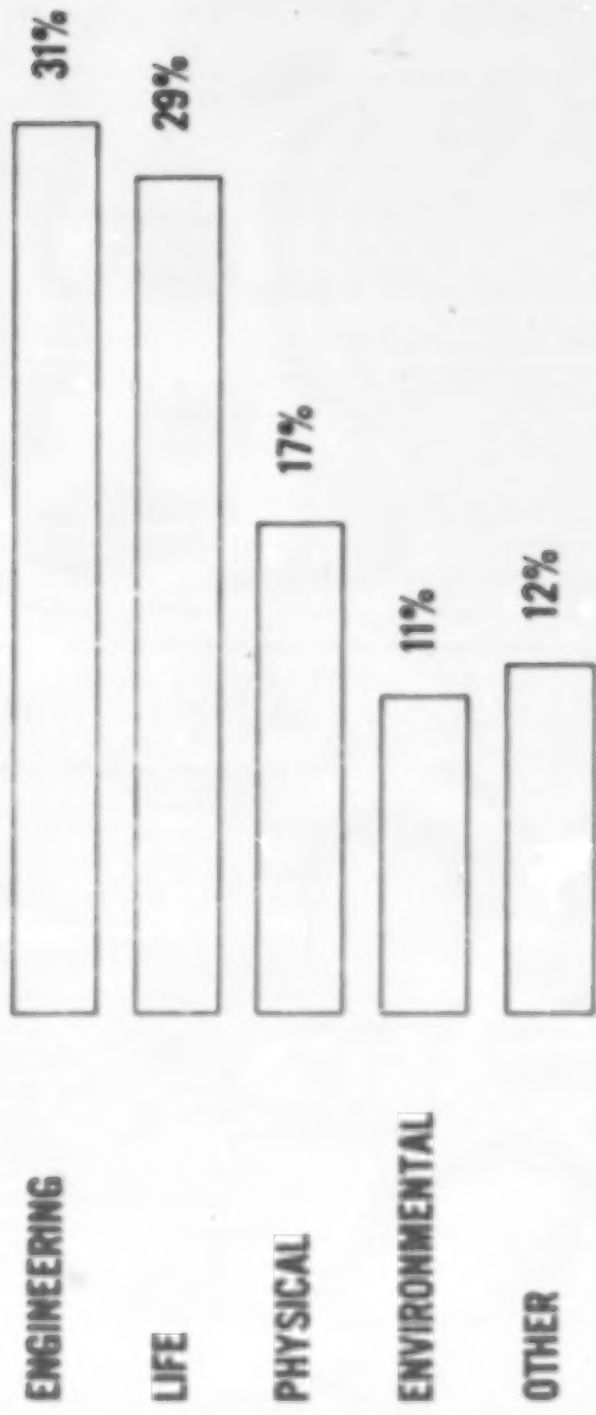
FIGURE 6

FEDERAL OBLIGATIONS FOR BASIC AND APPLIED RESEARCH

FY 1973 (est)

BY FIELD

\$7.3 BILLION



Source: National Science Foundation

TABLE I

FEDERAL OBLIGATIONS

(MILLION \$)

<u>YEAR</u>	<u>R & D</u>	<u>S&TI</u>	<u>Z</u>
1971	15,550	398	2.6
1972	16,600	419	2.5
1973 (E)	17,800	453	2.5 (E)
1974 (E)	17,400	440	2.5 (E)

Source: National Science Foundation

TABLE II

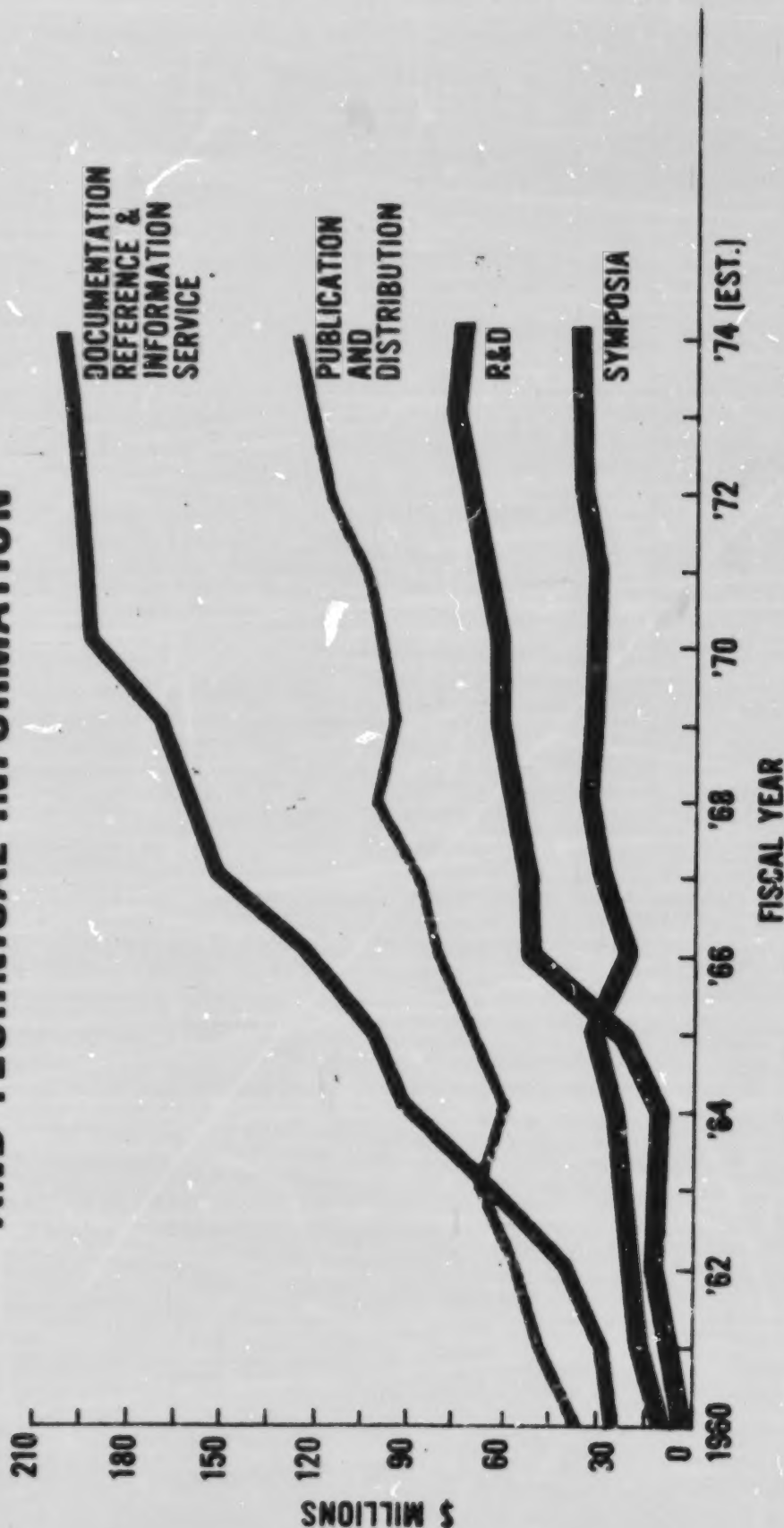
FEDERAL OBLIGATIONS FOR SCIENTIFIC INFORMATION

PROGRAM	1960		1965		1973 (EST.)	
	\$ (MILLION)	%	\$ (MILLION)	%	\$ (MILLION)	%
PUBLICATION AND DISTRIBUTION	37	48.7	68	30.2	122	26.9
DOCUMENTATION, REFERENCE AND INFORMATION SERVICES	28	36.8	102	45.4	217	47.9
SYMPOSIA	8	10.6	32	14.2	34	7.5
RESEARCH AND DEVELOPMENT	3	3.9	23	10.2	80	17.7
TOTAL	76	100	225	100	453	100

Source: National Science Foundation

FIGURE 7

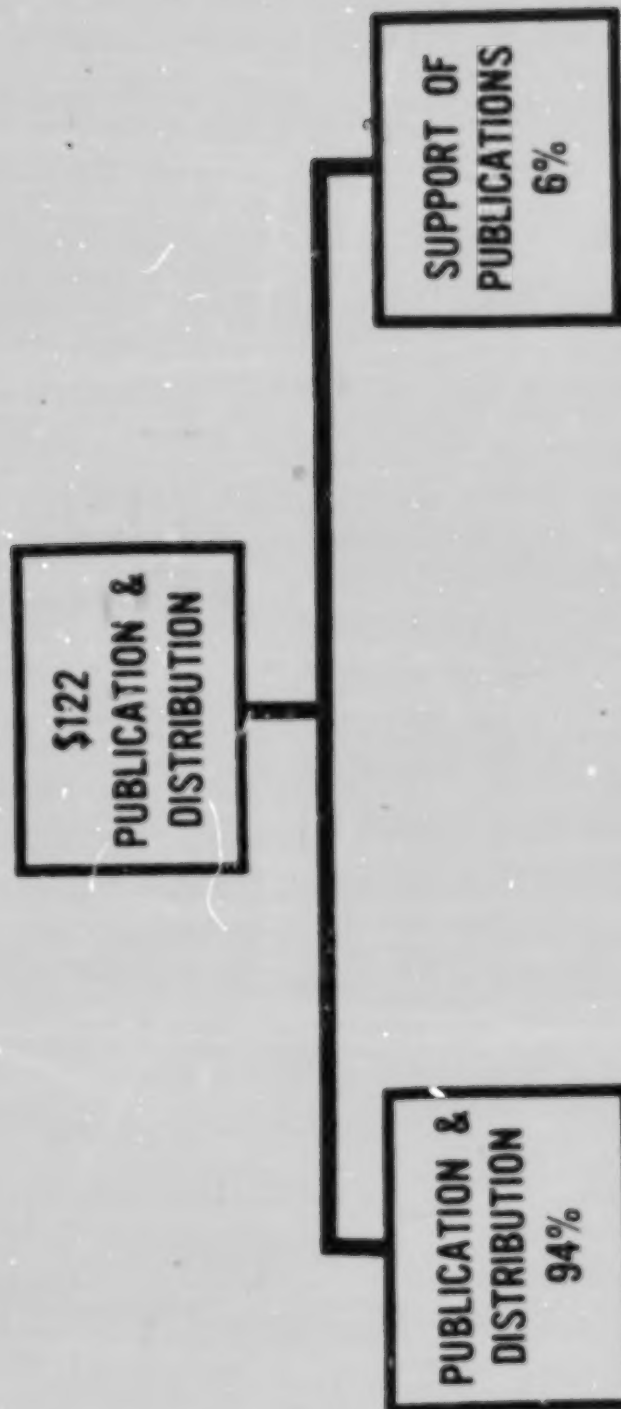
FEDERAL OBLIGATIONS FOR SCIENTIFIC AND TECHNICAL INFORMATION



Source: National Science Foundation

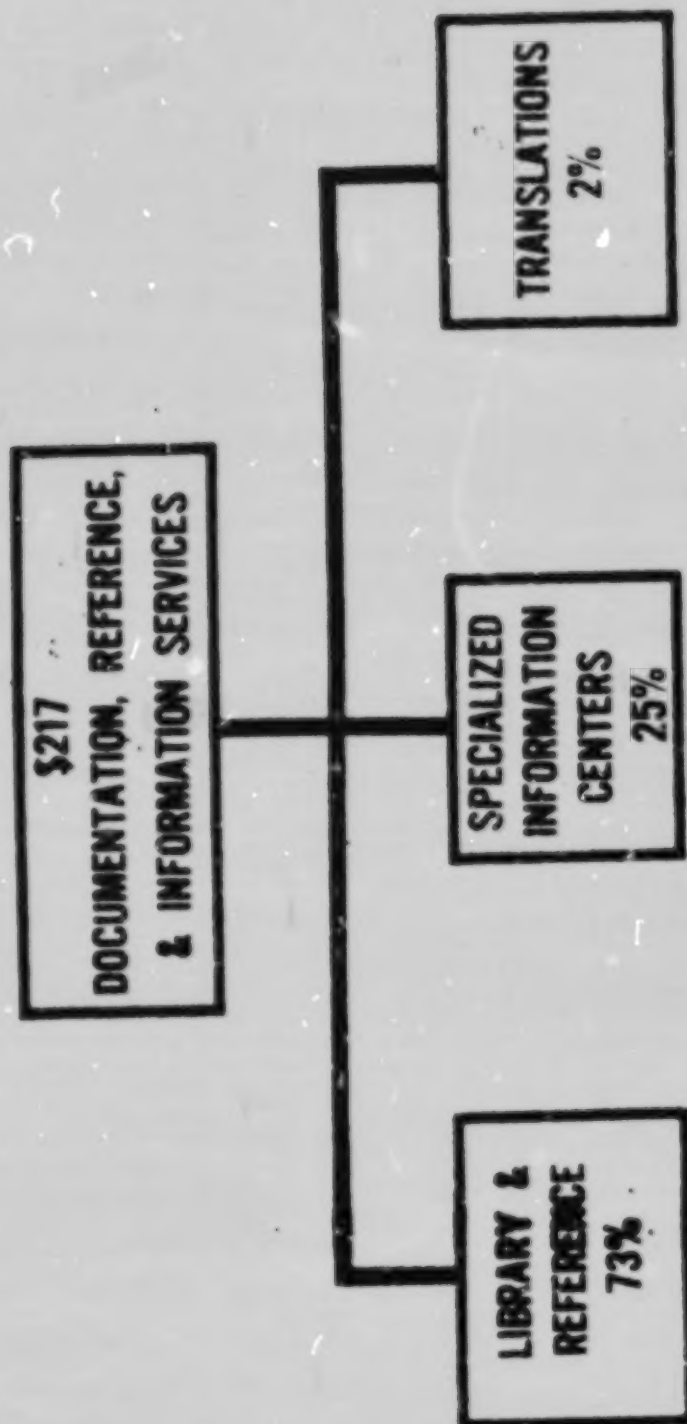
FIGURE 8

FEDERAL OBLIGATIONS
(MILLION \$, FY 1973 EST.)



Source: National Science Foundation

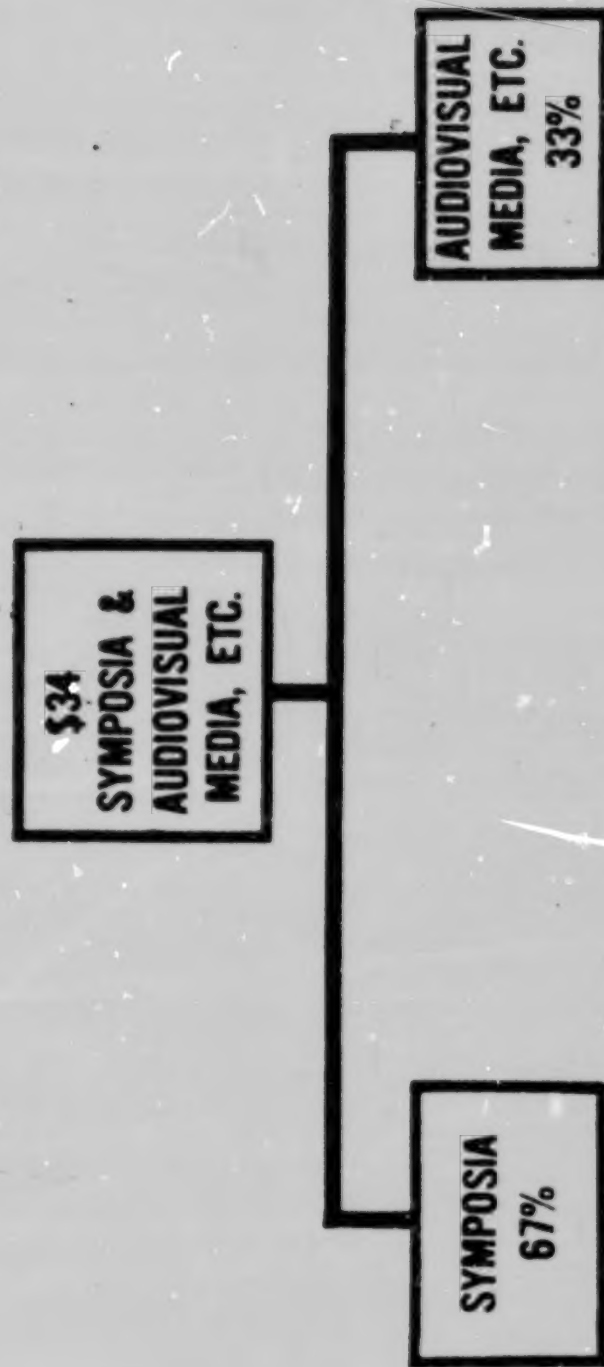
FEDERAL OBLIGATIONS (MILLION \$, FY 1973 EST.)



Source: National Science Foundation

FIGURE 10

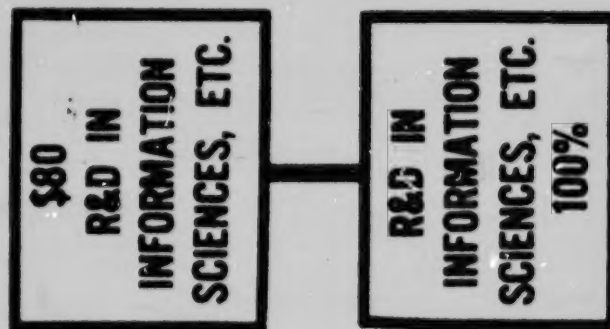
FEDERAL OBLIGATIONS
(MILLION \$, FY 1973 EST.)



Source: National Science Foundation

FIGURE 11

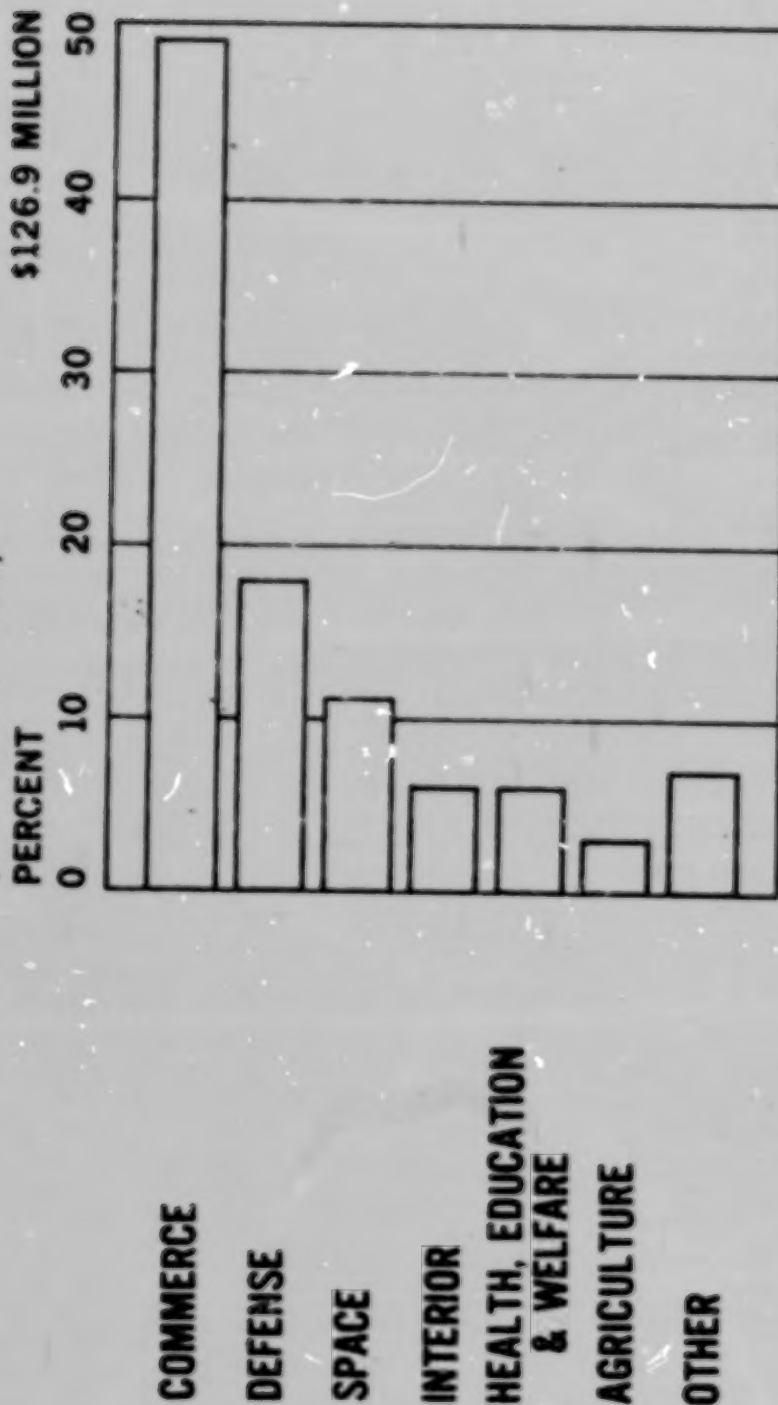
FEDERAL OBLIGATIONS
(MILLION \$, FY 1973 EST.)



Source: National Science Foundation

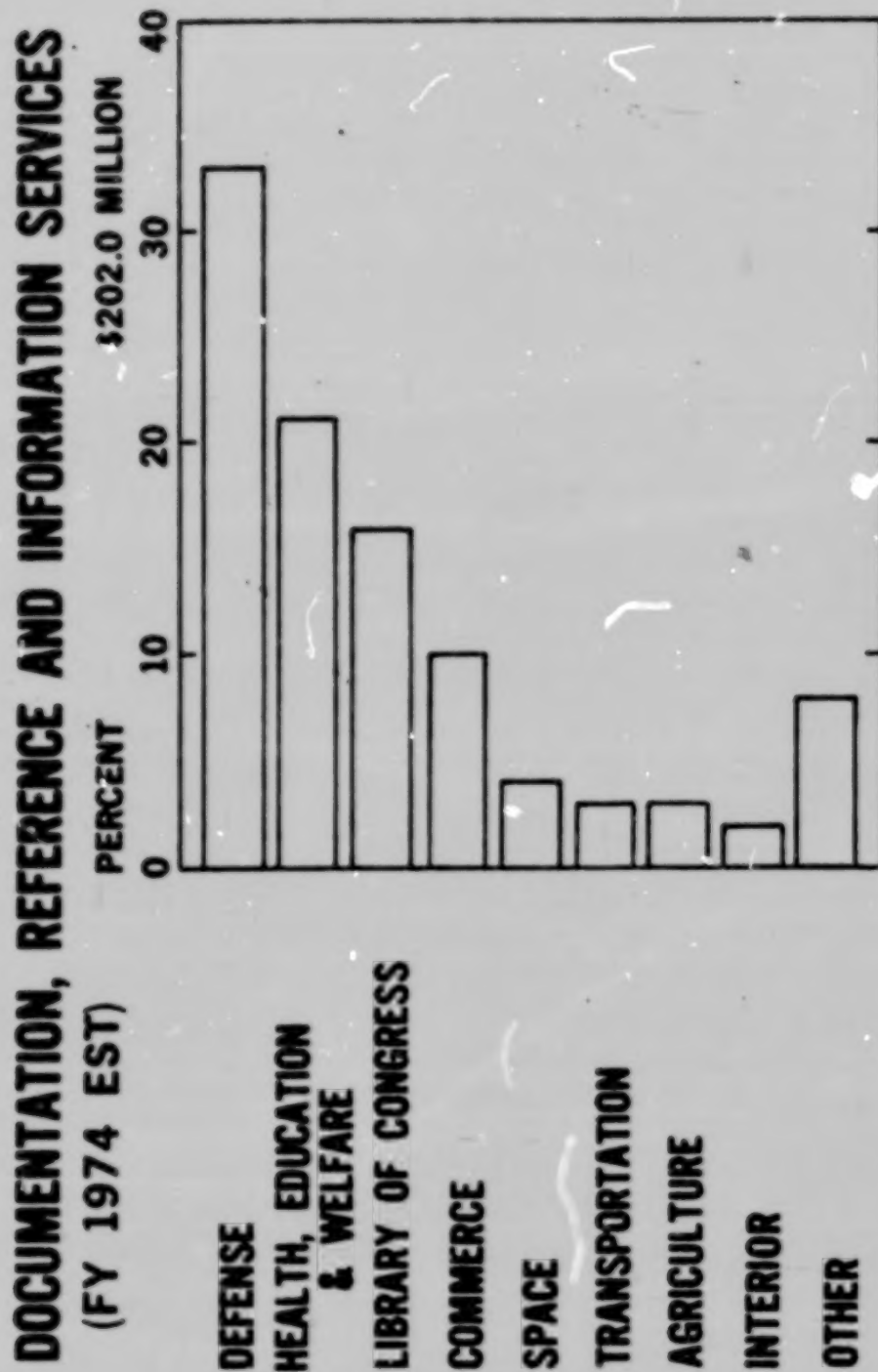
FIGURE 12

PUBLICATION AND DISTRIBUTION (FY 1974 EST)



Source: National Science Foundation

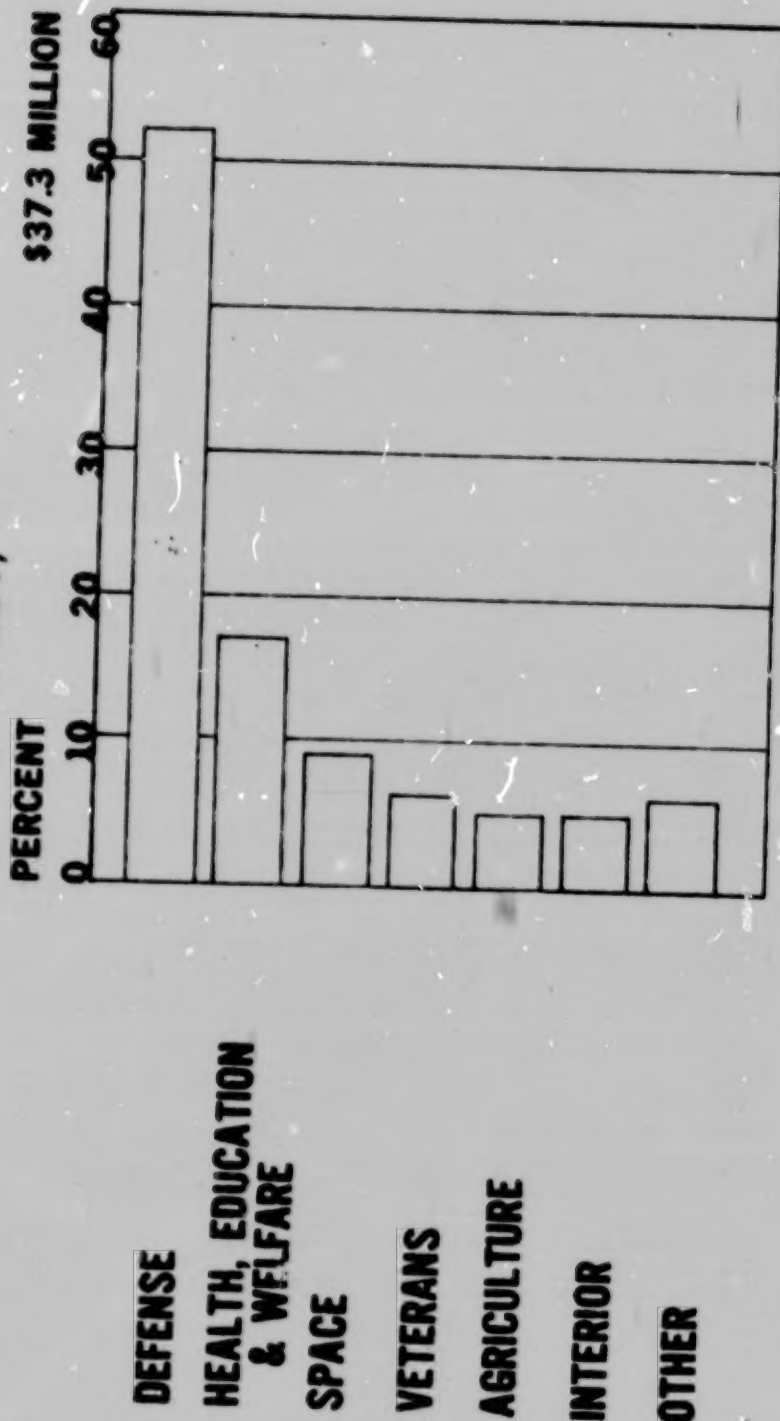
FIGURE 13



Source: National Science Foundation

FIGURE 14

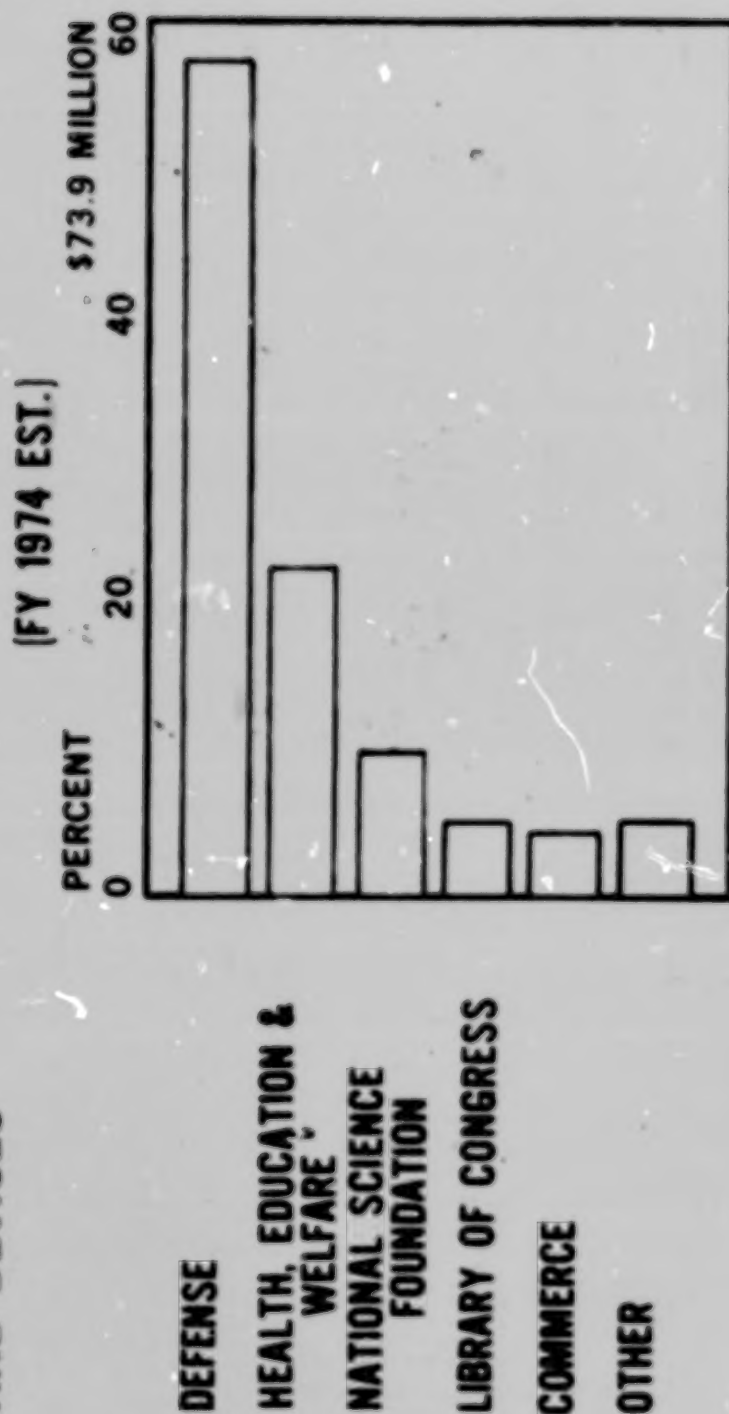
SYMPOSIA AND AUDIOVISUAL MEDIA (FY 1974 EST)



Source: National Science Foundation

FIGURE 15

RESEARCH AND DEVELOPMENT IN INFORMATION SCIENCES, DOCUMENTATION, AND INFORMATION SYSTEMS, TECHNIQUES, AND DEVICES



Source: National Science Foundation

TABLE III

**NATIONAL SCIENCE FOUNDATION FUNDING
FOR DISCIPLINE INFORMATION
RESEARCH & DEVELOPMENT ACTIVITIES**

(MILLION \$ THROUGH FY 1973)

CHEMISTRY	23.0
PHYSICS	5.5
PSYCHOLOGY	5.0
GEOLOGY	3.0
MATHEMATICS	.5
BIOLOGY	.3
ENGINEERING	.1
TOTAL	37.4

Source: National Science Foundation

FIGURE 10



FIGURE 17

NATIONAL LIBRARY OF MEDICINE

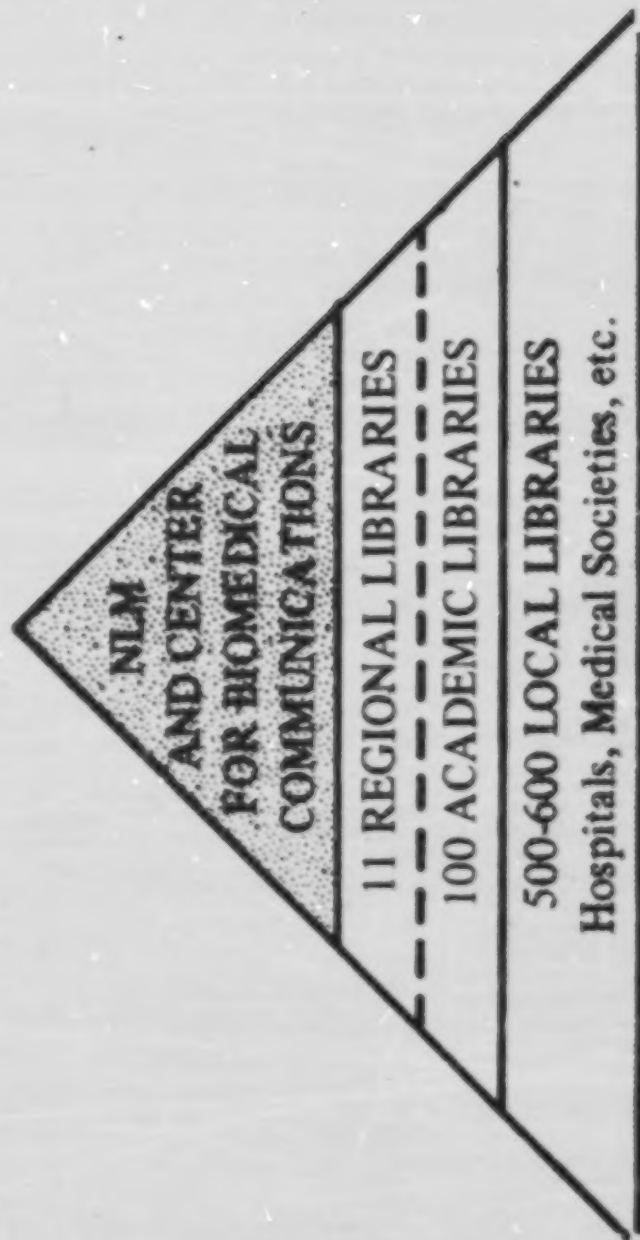
INTERNATIONAL DATA COMMUNICATIONS NETWORK**



** OPERATED BY TYMSHARE, INC. WITH DOMESTIC NODES AND A NODE IN PARIS WHICH PROVIDES TELEPHONE ACCESS TO NLM COMPUTER.

FIGURE 18

MEDICAL LIBRARY NETWORK PLAN



RELATIONSHIPS

- COMPATIBLE WITH NATIONAL INFORMATION SYSTEMS.
- COMPATIBLE WITH OTHER NATIONAL LIBRARIES.
- ASSIST SPECIALIZED INFORMATION CENTERS.
- ASSIST MISSION ORIENTED GROUPS, FEDERAL AND PRIVATE.

FIGURE 19

ALASKA EXPERIMENTAL SATELLITE COMMUNICATIONS PROJECT



FIGURE 20

NON US-MEDLARS CENTERS

COUNTRY	OPERATIONAL PERIOD					
	1966	67	68	69	70	71 72
AUSTRALIA						
CANADA						
FRANCE						
GERMANY						
JAPAN						
SWEDEN						
U. K.						
WHO						

3.2. ROLE OF GOVERNMENT IN INFORMATION TRANSFER

by J. MICHEL

France Representative

Basic Statement

The Government has the responsibility to assure that information transfer is effective, that information is accessible to every potential user, that no information is lost, that no barrier exists in information transfer.

The role of Government is double :

- To define a policy concerning STINFO, to coordinate all the information services, to develop an extensive incentive program.
- To take in charge various information operations. These operations can be performed by governmental agencies or organizations.

Main topics of a STINFO policy

- 1.- Kinds of users to be served. Only people engaged in Research and Documentation work or any people needing Scientific and Technical information.
- 2.- Scope of scientific and technical information. Narrow concept or broad one, including information in economics and social sciences.
- 3.- Information has various facets performed by appropriate services : Abstracting and Indexing services, libraries, AIC, data centres, etc...
Relationship between these services ?
Priorities to give to the development of these services according to the situation of each country ?

- 4.- Independance and interdependance. Policy to follow.
International cooperation. Language problems.
- 5.- Basis of operations sharing, between various kinds of organizations (government, semi-public, non profit, profit).
- 6.- Mechanism of coordination
 - study of overlap,
 - relationship between services of different nature,
 - review of budgetary requirements and expenses of each public organization or agency,
 - standardization, compatibility,
 - systems interconnexion.
- 7.- Financial mechanisms for incentive programs.
- 8.- Users. Passive or active role ?
- 9.- Tarification
 - Study and analysis of cost data.
 - Must users buy information ? Basis of tarification.
 - If services are not self-supporting, where will complementary support come from ?
- 10.- Research in information science and information technology.
- 11.- Education and training of information specialists.
- 12.- Long range planning.

3.3. THE ROLE OF GOVERNMENT IN SCIENTIFIC AND TECHNICAL INFORMATION

by M. PERRY

OSTI Representative

It is difficult to generalise about the role of government in STI because each government works in a unique situation and its role comprises a unique set of functions. This is especially true of service operation. Some governments run primary publications and/or secondary services, others leave them to learned societies and commercial publishers. Some have created information analysis centres, others have not. Virtually all of them run technical services for industry and agriculture, but the range and character of these services can vary greatly from one government to another. There is also much variety in the approach of governments to allocation of responsibilities. Some have no difficulty in keeping operational responsibilities within policy departments, some tend to put them out to government agencies and some tend to support them in independent bodies. How far a government becomes involved in the operation of information services is a matter for local judgement, and I don't think we can easily lay down general principles here.

What we can do, however, is assess the role of government in ensuring that users of STI -in government, in industry or in academic life- obtain and use the information they need. Though practice may vary here for, it is not due so much to local circumstances as to the fact that each government is having to learn slowly, by its own experience and that of others, what its role really is and how best it can exercise it. The principles that should guide their thinking, however, became more evident year by year, and these I think can be discussed usefully. The most important functions, it seems to me, are :

1. To monitor new developments in information technology, broadly defined to include such aspects on microreprography and facsimile transmission, and to promote experiments in which users can be exposed to new systems and services and their reactions studied at the same time as the technical and economic performance of the systems are assessed. This function should include support of experiments and of any new systems development that is necessary and can include support of the development of special equipment for STI systems.
2. To promote and, where necessary, support complementary experiments in the use of information analysis centres, as a means of providing information services closely tailored to personal needs.
3. To secure increasingly reliable information about user needs, drawing particularly on information gained from 1 and 2 above, and paying due attention to the education of users in the use of information sources. Systematic study of user needs is perhaps best done by the users' own organizations - ie. organizations of scientists, technologists and information specialists - but it costs money and requires support from public funds.
4. To ensure that gaps in information services are filled, and weaknesses remedied, as they are uncovered by user studies. The extent of financial support for these activities must depend on local services.
5. To co-ordination national effort, experimental and operational, inside and outside government, discipline-based or mission-based, in order to promote the best possible use, of human, technical and financial resources -which are scarce.
6. To ensure that the facilities for education and training are sufficient to provide the right kinds of information specialists in the right numbers and at the right time, bearing in mind the changes in needs and in technology can make rapid changes in educational provision desirable.

7. To promote research in the neglected areas of information science with a view to providing a sound basis for the improvement of services in the more distant future.

In interpreting these functions, and so defining its role in detail, the government needs to work in close partnership with the communities of scientists and technologists in the conduct of experiments, in the study of needs, in the identification of gaps and weaknesses and in determining what skill and what characteristics users require of information specialists. Obviously the more active these communities are, the smaller is the complementary role of government and the more effective is its participation. In the United Kingdom we have been fortunate in enjoying an active partnership of this kind with the communities of chemistry, physics and engineers and more recently with biologists as well.

I should like to devote the rest of this talk to some of the important practical problems that beset governments in performing their role in STI.

MECHANISED INFORMATION SYSTEMS.

The concept of networks of on-line information systems is slowly, but surely taking shape. In the United Kingdom, for example, the Government has recently launched the first stage of an experimental network, which exists primarily for research and educational purposes but which can easily develop into a fully operational network. All kinds of policy questions will begin to emerge as the operational stage draws near. Which systems are best suited to network operation? Which organizations should contribute, which data bases to a national network? Should the network be limited to a national basis or extended to a regional or world-wide basis? How are needs that span several data bases best handled? Should scientists and technologists be trained to use the networks directly or should plans be made on the assumption that much of the searching will be conducted by intermediaries, i.e. information specialists, between the systems and the final users?

Government initiative can help to find answers to many of these questions. But it is important that they should be closely studied during the experimental phase.

SCIENTIFIC LIBRARIES

Good literature back-up facilities are increasingly important in an age of large -scale mechanised services. It is now three years since, according to forecasts of the early 1960s, the traditional library was supposed to be dead; but it is still a fairly healthy animal, well away from death's door. None the less its mode of operation is changing rapidly as a result of technological progress and the pace of change may well quicken over the next few years. In most, if not all, countries the Government is administratively or financially responsible for the bulk of scientific libraries and has a major role to play on such questions as :

- the extent to which any one country, particularly a small one, should attempt to collect the rapidly growing volume of scientific literature, rather than rely on fairly comprehensive back-up libraries in other countries; and the optimum distribution of literature holdings within this library network.
- the policy that should be adopted for the collection and documentation of national non-conventional publications,
- the speed and extent of the introduction of microforms and other new techniques into libraries,
- the most effective and economical means of introducing mechanised housekeeping systems into libraries.
- the links that need to be established between library systems and information systems as they develop in future.

INFORMATION ANALYSIS CENTRES

If the growth of scientific literature continues, and especially if it grows at the rate envisaged by Professor Anderla in his report to OECD, there is a potentially important role for centres which select literature of value too small, specialised groups of users and then give a complete information service on the basis of it. In my view these centres will always complement, and will never oust, the large bibliographical systems; but they are expensive to run and new to be managed by highly dedicated scientists if they are to provide a distinctive and high-quality service. But their total part in the future information network is difficult to define. Most of the existing centres have been created as part of major Government-sponsored research programmes and responsibility for them tends to lie in Government agencies. But United Kingdom experience shows that they can also be run in universities, and there is no reason why, in some subject fields they should not be run by scientific societies. The questions that government can help answer include the following :

- which organizations can, or should, identify the priority areas for IACs ? The scientific societies, or research-funding bodies, or both ?
- whose responsibility is it to find suitable homes for new IACs ?
- how should the losses, which may persist for a long time, be funded?
- can a planned division of work between nations (as already attempted in ICSU/CODATA)
 - a. more easily secure good coverage of the important subjects ?
 - b. make IACs a better economic proposition ?
 - c. prevent wasteful duplication of effort ?

EDUCATION AND TRAINING OF INFORMATION SPECIALISTS

It is becoming increasingly urgent to consider what kinds of information specialists are likely to be needed more (and which kinds less) as a result of technological changes in progress and in prospect. The implications of such thought for the content of future academic, vocational and refresher courses are great indeed and there are already signs in several countries that many course directors are prepared to face them. Up till now the French have been for courses for information specialists to impart appreciation of the technological aspects (no more) and for courses in computing science or technology to omit or deal briefly with the special user requirements of STI systems. A better blend of the two is likely to be needed in future. Governments are usually responsible for the finance of most long courses in information science and computing science and it would therefore seem that they have a responsibility to ascertain, with help from scientific and educational bodies, what pattern of education and training will

best meet the emerging requirements, and how best it is built-up among existing and/or new institutions.

WIDER PROBLEMS OF INFORMATION

Lastly, I would like to draw attention to the major and rapidly growing problem for governments of handling the vast amounts of numerical and non-numerical information which it generates itself in the course of providing central or local services (health, education, welfare, economic, financial etc.). This information is operational, rather than scientific, but it can provide a basis for research and may be of use to research workers in other ways. Also non-research users may want to use it in conjunction with STI. In developing systems to handle this information governments will need increasingly to consider how the systems should be linked, in networks for example, with systems being developed for STI and how are best offers access, for users of many different types, to packages of scientific and non-scientific information.

SESSION 4 :

INTERNATIONAL SERIALS DATA SYSTEM (ISDS)

Chairman : F.A. STAFLEU

4.1. PRESENT STATE OF ISDS

by M. Rosenbaum
Director, ICRSP

1. The International Centre

1.1. Administration

1.1.1. Offices

The International Centre has worked until recently in offices provided by the Bibliothèque Nationale in Paris. It has moved to its own offices in September 1973. Its present address is : 20, rue Rachaumont - Paris 2ème .

1.1.2. Funding

The budget of the I.C. is based on a yearly sum of approximately 850 000,00 francs allocated by the French Government and a sum of \$ 60 000,00 granted by UNISIST for the years 1973/74.

1.1.3. Staff

- The I.C. has a full-time staff of 12 consisting of the director, 5 senior librarians, 2 systems analysts, 2 assistants, an administrative secretary and an office clerk. The senior staff is considered to be complete. The office staff will be increased in the near future.

- In addition to the above, a computer staff of 3 is working full-time for the I.C., on contract.

- Mr. David Martin has agreed to act as permanent consultant to the I.C. and a contract has been signed with Inspec to that effect.

1.2. The Technical Advisory Committee

A Technical Advisory Committee of 10 assists the I.C. in all technical matters. It consists of experts acting in their personal capacity and active in the fields of serials and systems administration.

1.3. The International file

A basic file of approximately 30000 scientific and technical serials is being built at the I.C. Source input has been provided by : Chemical Abstracts Service, Biological Abstracts, Geological Abstracts, Inspec, CNRS Documentation Centre. Several other files are used for reference.

The source files have been converted and are now being merged both manually and by computer. The target date for the completion of the base file is April 1974.

1.4. Publications

1.4.1. Guidelines for ISDS

The I.C. has established, with the help of the TAC, a basic document for file building and communication under the title "Guidelines for ISDS". The document defines : the structure of ISDS, operational policies and procedures, data element content of ISDS files, file structure, content and interchange specifications.

The "Guidelines" have been published as a Unisist document and can be obtained, in French and in English, from the Unesco secretariat or from the I.C. The Russian version of the Guidelines is ready for publication.

1.4.2. ISSN register

A first edition of the printed ISSN register is scheduled for December 1974. It will contain the basic ISDS file of 30000 titles as well as the additional titles numbered and registered by ISDS Centres.

1.4.3. Permuted ISSN index

A permuted index of all titles to which ISSN have been assigned is also planned for December 1974. The permuted index will be published jointly by the US National Centre and the I.C.

1.4.4. ISDS Bulletin

An updating bulletin containing additions and corrections to the basic international file will be published by the I.C. It is planned as a bi-monthly publication with annual cumulations. The target date for the appearance of the first issue is July 1974.

1.4.5. Registration of serials at the I.C.

The I.C. has started numbering and registering serial titles in January 1973. The numbering is done on request from individual users, publishers and other ISDS Centres.

2. The ISDS network

2.1. Role of National Centres

The role of ISDS National and Regional Centres, as defined in the ISDS Guidelines is :

- to assure bibliographic control for all serials published within their territories by systematic registration.
- to respond to current demand from users within their territories and from other ISDS Centres.

This double role is clearly defined in the draft bilateral agreement, which has been approved at the last meeting of the TAC and which will serve as basis for programmes of cooperation between the I.C. and every new ISDS Centre.

In preliminary agreements between existing ISDS Centres and the I.C., provision has been made, however, for a transitional period. It is understood that, until such time as a National Centre is ready to assume its full responsibility, the I.C. will assure the numbering of serials on request from individual users or services.

2.2. Present state of the ISDS network

The I.C. has established contact with several countries which have replied favourably to the letter of the Director General of Unesco, inviting member states to establish ISDS Centres.

The following National Centres are either fully operational or starting operations.

- the US NC established within the framework of the National Serials Data Program (NSDP).
- The Canadian NC established at the Canadian National Library.
- The Australian NC established at the National Library of Australia.
- The UK NC which will function within the British Library.
- The Belgian NC established at the Bibliothèque Royale.

The following countries will establish Centres in the very near future :

- The USSR has announced the establishment of a Regional Centre at the International Centre for scientific and technical information in Moscow.
- France has announced the establishment of a National Centre at the Bibliothèque Nationale.

Further negotiations are in progress with Argentina, Denmark and Japan. The I.C. is also negotiating the establishment of a Centre at Unesco for the numbering of serials published by international organizations.

3. Cooperation with other International Organizations

3.1. ICSU AB

The I.C. is examining with the ICSU AB secretariat the possibilities of establishing close links between the work of ISDS and the ICSU AB input plan. The work on a system design establishing links is now in progress.

3.2. IFLA

The I.C. has been actively involved in the work of the IFLA working group on bibliographic description on the International Standard Bibliographic Description of Serials (ISBDS). This active cooperation has permitted to achieve complete compatibility between ISBD(S) and ISDS data element content.

3.3. ISO

The I.C. has actively participated in the establishment of a draft standard for ISSN. The draft standard has been approved at the general convergence of ISO/TC 46 held in Schwenningen in September 1972. It will be published as an ISO Standard in the near future.

The I.C. is also participating in the activities of other ISO/TC 46 groups, whose work is closely connected with ISDS requirements.

4.2. PROBLEMS OF A NATIONAL CENTRE LINKED WITH ISDS

by C.J. KOSTER

Editor, British Union Catalogue of Periodicals

Before discussing some of the problems of setting up a national centre to take part in the operations of the International Serials Data System, I should like to sketch in a little of the background developments concerning the British Library, which will be responsible for the establishment and the operations of the United Kingdom National Centre.

As many of you will know the British Library is the outcome of the 1969 Dainton Committee Report in which the operations of the main national libraries in this country, the British Museum and the National Reference Library for Science and Invention, the National Lending Library for Science and Technology, the National Central Library, were considered, along with the independantly financed British National Bibliography, with a view to their rationalisation and co-ordination under one organization which would carry out the national library functions for the country. With the acceptance of the main recommendations of the Dainton Report, the British Library Act was passed in 1972 to give effect to the establishment of a library by the merging of these organizations. Early on an organising committee was set-up consisting of representatives of the constituent organizations themselves, and librarians from university, special, and public library areas, to undertake the complex task of preparing the initial plans for bringing the BM, NLLST, NCL and BNB into one large library. The British Library has now been established and vesting day was the 1st July.

The British Library has already inherited from its constituent members vast resources in books and other materials, and an important part of these collections is the serial holdings in both the lending and reference areas. A comprehensible serial collection covering all subjects is to be built up at Boston Spa and together with the coverage of the older humanities and social sciences in the British Museum it is hoped that the British Library will be able to meet the majority of the demand made on it for serial requests. In order to make this material readily available there is a need to co-ordinate the operations concerned with serials processing throughout the British Library, and further to relate them to the development of a serials data base at both the national and international levels. For this and other reasons the development of the International Serials Data System and the associated assignment of ISSN was considered early on by the British Library Organizing Committee and it agreed, on behalf of the British Library, that the library should be responsible for the setting up and maintenance of a national ISDS centre for this country. The British Library will consist of three main divisions; lending, reference, and bibliographical and processing, and it is as part of the bibliographical and processing division that the British national centre will be established and carry out its operations.

Over the passed few months I have been involved in preliminary work concerning the establishment of a centre and its operations and I propose to consider the general requirements of a national centre, to discuss some of the problems which needed consideration in connection with the establishment of British centre -in other words to discuss the local problems, and obviously the problems any centre encounters will largely depend on the local situation - and then to pass onto an outline of the proposals for carrying out our operation. Finally perhaps I can consider how we can relate the centre to the needs of users in the various publishing, abstracting and indexing activities that will be involved in the use of ISSN and the development of the ISDS.

The starting point for considering the establishment of a national centre is the ISDS Guidelines in which the framework for the system is outlined and details of the functions of national centres given. The basic functions of a national centre involve responsibility for :

1. The assignment of ISSN to serials published within its area.
2. Contributing this information in accordance with the ISDS requirements towards the establishment and maintenance of the international file, and operating in close co-ordination with the International Centre.
3. Promoting the use of ISSN within its territory and providing the link between the publishers of serials and the ISDS network.
4. The dissemination of information from its national files, and responsibility for the relationships with the various users of ISDS; abstracting and indexing services, publishers, and librarians.

It is important to remember that national centres may well assume responsibilities and functions at the national level within their own countries, and although these as such will not concern the ISDS directly some of the activities carried out may later become of great value to the system as a whole. In many cases national centres may for instance wish to publish their own more comprehensive lists of serial titles including the ISSN which they will have assigned, together with holdings or other details. To an extent the use of common data provided for ISDS will assist this purpose, although the conditions under which these files may be reproduced or otherwise distributed will be among the considerations to be made at the time an agreement is negotiated with the International Centre.

Ideally it would be desirable for a national centre to be able to handle the serials published within its area, but in any event it is essential that it should have access to appropriate sources which can provide the necessary information and visual proof, for instance in the form of photocopies of the cover and title page of a serial, or perhaps aperture cards (which contain a microfilm of the title pages)

as used by the United States National Centre. Considerable bibliographical checking and verification is also to be expected particularly as certain of the details which are required by the International Centre may not always be available. All records to be introduced into ISDS files at any level must contain the basic set of twenty five data elements, considered necessary for the identification of each serial, and clearly all of these may not be available in the first instance when a serial is registered. For this reason it has been decided that only eight of the elements will be considered essential at the time the record for a serial is first sent to the International Centre. The remainder can be provided at a later stage as they become available.

It is to be expected that the design and maintenance of national centre computer based operations will largely depend on local systems and requirements, but where it is possible to communicate records in machine readable form to the International Centre, the ISDS common interchange format must be utilised. The ISDS format is a subset of the MARC serials format and the common data element tags, form and content specifications, and the common character set to be used, and have all been defined in agreement with the Library of Congress MARC Office. However, in the early stages of the ISDS network establishment I feel that it is unlikely that the majority of national centres will be in a position to be provide machine readable data, and it is far more likely that information in the form of "hard copy" will be forwarded to the International Centre where the preparation of machine input will be undertaken. The International Centre has already recognised this situation and a working sheet has been designed for the use of national centres providing information in this way.

As the operations of a national centre commence, its activities in promoting the use of ISSN within its territory will begin to develop. In the first stages arrangements will need to be made for notifying publishers of the ISSN which have been assigned to their publications.

It will no doubt also be necessary to provide an explanation of the ISSN system and to point out to the trade the eventual benefits which will result with the spread of ISSN. Impressing on publishers the need to print the ISSN assigned to a serial in each issue is particularly important, especially as this may also encourage a greater awareness on their part for the need to control the increasing title changes which some serials unnecessarily undergo. Eventually a national centre should develop responsiveness to the various needs of users within its area, by handling requests for ISSN, providing in advance of publication assignments, and through providing various publications and services which give reliable information on the data held in ISDS files.

Turning now to the setting-up of a British national centre, as I have already mentioned this is to be established under the British Library, and it is intended that the centre will begin with the assignment of ISSN to new and changed serial titles appearing from 1973. For this purpose the International Centre has made available an initial block of 5,000 ISSN. In considering the operation it is necessary to bear in mind the many problems that are attendant on the establishment of the British Library, and to realise that decisions have yet to be taken which will affect all areas of the British Library's work, not least in connection with the development of serials processing and control, and the possible establishment of a data base of serials information for the British Library. Clearly it is not possible at this stage to make too many decisions which are the province of the British Library Board and it therefore seems best to aim for an interim operation which can first cope with dealing with new and changed titles, and at least begin the work of forwarding data to the International Centre thus aiding the build up of the ISDS file.

The first problem is to consider the extent of the numbering that can be undertaken in terms of present resources, and in the early stages it is proposed to number all serials which are first published, or which change their title from 1973 on. In connection with retrospective numbering a good deal has in fact already taken place in the Bowker Serials Bibliography. This covers the Ulrich Periodical Directory and the Irregular Serials and Annuals publications, and the numbers are given in the index to these, the Title Index for Bowker Serials Bibliography. Clearly the numbering which has taken place in this publication must be taken into account in any future retrospective numbering a national centre will undertake concerning the serials published in its own territory. Further retrospective numbering is also taking place in the production of the New Serials Titles twenty year cumulation covering 1950-70, and in connection with this publication it will be possible for the British centre to respond to requests received through the International Centre for ISSN for certain of our own serials appearing in this cumulation. The numbering carried out in both Bowker and NST provides a large base of serials to which ISSN have been given, and although this offers some advantages, on the debit side there will also be problems arising from the different cataloguing treatment of serials for these publications. With this retrospective numbering situation in mind it seems best that the British centre should not at this stage undertake any further extensive work, and it is proposed that it limits itself to a) handling requests received through the International Centre and users and b) numbers previous titles of serials which change their titles from 1973 and which do not appear in either Bowker or NST cumulation.

We next need to consider the extent of serial coverage and here we note that for ISDS purposes a serial has been defined in the Guidelines as follows : "a publication in print or in non-print form, issued in successive parts, usually having numerical or chronological designations, and intended to be continued indefinitely. Serials include periodicals, newspapers, annuals (reports, yearbooks, directories etc.), journals, memoirs, proceedings, transactions etc. of societies, and monographic series."

As you can see this is rightly all embracing but in the case of the last group -monographic series- for British purposes we certainly need to be more specific. If the definition was interpreted generally, permitting as it does the inclusion of both numbered and unnumbered series, this could well lead to a considerable amount of work in the number of items to be assigned ISSN, and in my view would result in the needless assignment of numbers to a wide range of items which had been, or would be, assigned ISBN. In this context I am specifically thinking of publishers series, which in many instances are often little more than devices to link together a group of monographs covering a particular aspect, but more from a sales point of view than any other, and in any case these are not true serials and are quite adequately dealt with through the ISBN machinery. It would be a mistake to include all these in the net for ISSN purposes. However, this is not to say that there are not certain publishers series which would fall within the ISSN sphere and clearly in some instances we would need both an ISSN for the series and ISBN for the individual parts.

In the case of monographic series emanating from academic and scientific institutions, societies or other organizations and which are more in the nature of transactions and proceedings, these would require inclusion whether numbered or not. In my experience it is not often that they are in fact unnumbered. To summarise then the British centre proposes to a) normally exclude monographic series issued by commercial publishers whether numbered or not, and b) include monographic series issued by academic and scientific institutions and societies whether numbered or not.

I should now like to pass on to how we propose to handle the serials and to outline our interim operation. The Copyright Receipt Office in the British Museum offers itself as the most suitable source for the material, and arrangements have been made to handle the serials received here. It has been necessary for special arrangements to be made concerning current scientific material which has to be passed to the NRLSI without delay. These arrangements in fact cover serials currently

received at the NRLSI and which change their titles, and, as I say, in order to prevent delay these will continue to be forwarded directly from the CRO and the NRLSI will undertake to provide cataloguing data to the British centre for the assignment of ISSN and forwarding to the International Centre. Interim arrangements of this kind will be necessary whilst various parts of the British Library remain separated but once the Copyright Receipt Office is in the same building as the Bibliographic and Processing Division, of which it will be a part, the handling of serials will be greatly facilitated.

Turning to the cataloguing procedures these will be based on the ISDS Guidelines, and the ISSN will be assigned to the key title for the serial. The rules governing the choice of this key title and the conditions under which it will be considered to have changed are given in the Guidelines which will be used as the working tool in the cataloguing operation. The basic procedures for handling serials and providing records to the International Centre have been proposed as follows :

1. Serials will be catalogued in the Copyright Receipt Office and ISSN assigned (the data for NRLSI changes will be provided by them).
2. Worksheets providing the necessary ISDS elements (based on the International Centre's design) will be used for this purpose.
3. Bibliographical checking as necessary will be undertaken to ensure that as many ISDS elements as possible are initially provided. Elements which cannot be supplied initially will be given when available.
4. Completed data sheets will be forwarded to the International Centre and data preparation undertaken here during the interim period.
5. Notification to publishers.

This situation is proposed as interim and once the overall pattern for handling serials in the British Library becomes clear it will no doubt be possible to move towards a common cataloguing operation and to begin to provide the records for ISDS in machine readable form.

Perhaps I can finally say a few words on matters which will be of more interest to those of you here concerning communications with users. In order to establish the system quickly and promote the use of ISSN it will be important to advise publishers as soon as a number is assigned to their serials. At the same time I would hope that as the centre's operations become established it would be possible to develop an in advance of publication facility. That is to say that once it became clear that a serial will be published on a certain date we can, on receipt of visual proof, provide an ISSN that can also be printed in the first issue of the serial. The same situation could apply in the case of changes of title that are being planned. In this way the promotion and dissemination of ISSN can be encouraged.

We are also conscious of the need to develop an immediate response to user requests particularly from abstracting and indexing services. For the new journals that these services will cover we will be able to provide early ISSN, but there will no doubt be more retrospective numbering problems which will also be concerned with non-British serials. Approaches could be made directly to the International Centre in a number of cases but for the purposes of co-ordination and control it would be as well to firstly approach the national centre which could act in the capacity of a "clearing-house" for most of these problems. It may in fact be able to resolve many of the queries itself. Omissions and problems on the inclusion of particular serials are bound to be thrown up and this will require checking on the receipt of titles in the British Museum. If necessary it will be important to chase up material which has not been deposited. Ultimately as the centre develops we will be in a position to provide access to the ISDS files through tape and other outputs to cater for a variety of user needs, but I feel that at this time these kind of services are some way off and in the initial stages we must be concerned with setting up operations developing relations with users, and consolidating a base from which development can take place.

Once operations have begun in earnest there is one practical development which would be extremely useful and that is the establishment of an advisory committee to reflect the needs and interests of the user community. This could be comprised comprised of representatives from the publishing, abstracting and indexing, subscription agency, and library areas to provide the necessary reaction and feedback on the ISSN system and its users. In this way we can ensure that the work of the national centre relates to users and that its role in the development of the International Serials Data System is planned with this in mind.

SESSION 5 :

REPORTS FROM MEMBER SERVICES

AND

BY SELECTED OBSERVERS

Chairman : F.A. STAFLEU

5.1. REPORTS FROM MEMBER SERVICES

5.1.1. ASTRONOMY AND ASTROPHYSICS ABSTRACTS

Report on Activities

by F. HENN

Editor in Chief, Astronomisches Rechen
Institut, Heidelberg

Since the Full Board meeting in Ustaoset our abstracting service has provided about 14 000 abstracts of papers published in 1972 in the various fields of astronomy, astrophysics, extra-terrestrial research, and in border fields. We have scanned about 800 periodicals including about 300 publications from observatories and astronomical institutes. Border fields have been taken into account by presenting titles of papers, occasionally without abstract; the selection of such papers has been made according to the degree of relevance to astronomical research. Two printed volumes with 536 and 604 pages, respectively, have been published. Information is given on a large number of conference papers and on recently published books. Success in spaceflights (exploration of Venus, Mars, etc.) and landings on the moon have resulted in many progress reports on the moon and other bodies of the solar system. The development of new astronomical techniques shows advances in many fields of astronomy, in particular in solar physics, stellar and galactic astronomy.

For 1973 we have already recorded about 5000 papers including 600 papers on the moon.

At the end of the first five year period of publication of "Astronomy and Astrophysics Abstracts" we plan to produce a general index, which is intended to appear late in 1974. For this purpose we have developed a new sorting program using the IBM 360 in Heidelberg.

The subject index in the general index will be a revised and amended version of the indexes of the volume 1 - 10. We have in mind that this index may serve as a first approximation of a thesaurus for astronomy.

5.1.2. AMERICAN INSTITUTE OF PHYSICS (AIP)

by H.W. KOCH

Director, American Institute of Physics

With continued support from the U.S. National Science Foundation, AIP's Current Physics Information Programme matured during 1972 into an integrated and diversified set of secondary services and products. The integration involves the regular primary journals and the by-product secondary products.

The Current Physics Information Programme was designed to provide timely and economical access to physics information and each of its products is a key element in that goal :

1. Current Physics Advance Abstracts (CPAA) provides a monthly preview of upcoming articles in AIP-published journals and a growing number of journals published by others, in three subject oriented sections. CPAA contains author-indexed and composed abstracts, the majority of which appear two months ahead of journal publication.
2. Current Physics Titles (CPT) provides the same subject oriented sections ~~as~~ CPAA but is composed from a computer tape used in the production of the primary journals and called SPIN.
3. Searchable Physics Information Notices (SPIN) is a monthly computer tape containing in each issue the computer-searchable records of about 2500 articles culled from the world's leading physics journals, along with appropriate cross references to current Physics Microfilm.

4. Current Physics Microfilm (CPM) provides the full text of all AIP-published journals on a monthly basis on 16-mm searchable microfilm cartridges, as a backup for both Current Physics Titles and SPIN.

An essential element in providing these computer-based services economically is multiple use of the items keyboarded into the computer. Joint use of the same keyboarded material for preparing journal article "heads and tails" and for producing SPIN is a step in that direction. A contract with the U.S. Atomic Energy Commission to provide camera-ready copies of abstracts from U.S. physics journals for Nuclear Science Abstracts is a further step. Negotiations were continued in 1972 with the Institution of Electrical Engineers for a similar input to Physics Abstracts and for the INSPEC ^{operation} of IEE to provide non-US input to SPIN. At present AIP is the U.S. marketing agent for three IEE products : Physics Abstracts, Current Papers in Physics, and the INSPEC magnetic tape service. IEE is the European marketing agent for all Current Physics Information products.

5.1.3. PSYCHOLOGICAL ABSTRACTS INFORMATION SERVICES

By H.P. VAN COTT
Managing Editor and Director
American Psychological Association

The American Psychological Association has engaged in a continuing effort to provide greater selective access to the literature relevant to psychological experimentation and knowledge. This guide has been prepared to facilitate effective use of the Psychological Abstracts (PA) journal and to help introduce the family of publications and computer-based services known as Psychological Abstracts Information Services (PAIS).

OVERVIEW OF OPERATIONS

The PA journal provides nonevaluative summaries of the world's scientific literature in psychology and related disciplines. PA production operations entail four major processing stages : acquisition, abstracting, indexing, and encoding. Material acquired and selected for coverage must contain an original contribution in a subject matter area represented by PA index terms. The staff prepares original abstracts and augments or condenses English language abstracts or summaries provided in selected material. Volunteer and free-lance abstractors provide additional expertise for coverage of those sources that require technical or specialized knowledge or facility with an exotic language. From a controlled indexing vocabulary, the staff selects and applies to each record those terms that most accurately represent its subject matter content. Finally, all copy is encoded to produce the machine-readable tapes that are used in photocomposition of the journal and that have made possible the developments described subsequently.

PSYCHOLOGICAL ABSTRACTS AND FORMAT

PSYCHOLOGICAL ABSTRACTS covers material from over 800 periodicals and scans about 1,200 books and separates each year. About 24 % of all material covered was originally published in a foreign language.

Articles from periodicals are generally abstracted ; books are cited, with an additional sentence or two (annotation) if the title is not definitive ; separates (i.e. technical reports, monographs, etc.) are cited, annotated, or abstracted according to their relevancy to the behavioral and social science community. In addition, relevant material found in Dissertation Abstracts International is cited.

MONTHLY ISSUES

The records in each issue of the PSYCHOLOGICAL ABSTRACTS journal are arranged in alphabetical order by author within 17 primary classification categories, as listed in the Table of Contents. Records are numbered consecutively across each six-issue volume.

Each issue contains a Brief Subject Index and an Author Index. In the former, index terms - with appropriate cross-references - are listed in alphabetical order, followed by the identifying numbers of those records describing content represented by the term. The Author Index is intended to be a name index only, not a person index. Thus "Smith J." would be listed separately from "Smith John," even though they might refer to the same person ; similarly, numbers of all records ascribed to "Smith, J." would be listed jointly, though they may identify the work of different authors. As many as four authors are referenced for each record.

Occasionally, abstracts of articles from a single issue of a periodical covered by PSYCHOLOGICAL ABSTRACTS may appear in consecutive PSYCHOLOGICAL ABSTRACTS issues. For example, if one

issue of a periodical contains 20 articles, abstracts of 17 of these may appear in one PSYCHOLOGICAL ABSTRACTS issue, with the other 3 being carried the following month.

VOLUME CUMULATIVE INDEXES

Each Volume Cumulative Index provides an expanded Subject Index as well as an integrated Author Index for the previous six issues of the PSYCHOLOGICAL ABSTRACTS journal. Entries in the Subject Index are in the form of free index phrases alphabetically arranged under the appropriate index terms and followed by an identifying record number. Index phrases reveal the independent and dependent variables described in the material, and the subject population. In addition, each Volume Cumulative Index contains a complete list of all periodicals regularly scanned for PSYCHOLOGICAL ABSTRACTS coverage.

INNOVATIONS IN INDEXING AND CLASSIFICATION

An expanded controlled indexing vocabulary derived from a newly developed thesaurus of approximately 4,000 terms is being introduced, which should greatly enhance selective retrieval of PSYCHOLOGICAL ABSTRACTS records. The new indexing vocabulary retains the 800 broad terms previously used while incorporating additional broad terms and more specific narrow and related terms. Cross-references between narrow terms and broader terms are provided to facilitate retrieval at the level of specificity desired by the researcher.

Only those terms that have been applied to the subject matter contained in a PSYCHOLOGICAL ABSTRACTS issue are listed in the Brief Subject Index in that issue, while the Volume Cumulative Index provides a listing of all terms issued in the previous six PSYCHOLOGICAL ABSTRACTS issues. The complete vocabulary with term relationships more fully defined will appear in a thesaurus.

Data obtained in developing the thesaurus was also used to determine empirically the major fields of interest of psychologists. In addition to the data provided by a selected sample of psychologists, consideration of membership in AMERICAN PSYCHOLOGICAL ABSTRACTS Divisions helped to determine the 17 new primary categories being used to classify PSYCHOLOGICAL ABSTRACTS records. A description of these new classification categories follows.

General

This category encompasses the history and philosophy of psychology, substantive information about psychology as a discipline, and scientific information exchange as it relates to psychology. In addition, subject matter that is not appropriate for classification in any other category is included in this area. For example, descriptions of empirical methods, experimental design, simulation techniques, and so forth, that are oriented to the content in the other categories are classified in this area.

Psychometrics and Statistics

This category includes psychometric methodology and experimental design, and encompasses all types of measurement used in psychological evaluation, regardless of setting (educational, vocational, etc.). It is used for descriptions of the construction, validation, or statistical evaluation of a test, attitude inventory, or rating scale. Material on reliability, standardization of norms, or validation of new sample populations or foreign language versions is classified in this area. This category is used only if the major subject matter concerns the test, scale or inventory ; it is not used for material in which an instrument is applied solely as a measurement technique. In addition, this category includes material concerning mathematics and statistics, mathematical models, and statistical formulas used in psychological evaluation.

Perceptual and motor Performance

This category includes all studies of human perception : visual, auditory, kinesthetic, or somesthetic, as well as extrasensory. Material concerning perceptual judgment or discrimination, time perception, reaction time, motor performance, signal detection, or other psychophysical phenomena is classified in this area. Audiometric studies relating to perception rather than to physiology are included. This category is restricted to those materials that have humans as a subject population.

Cognitive Processes and Motivation

This category is concerned with learning and memory and the cognitive processes that are involved therein. This includes studies of how motivation, personality, environmental effects, stress, or stimulus and response parameters of conditioning affect learning and memory or mental processes. Learning as defined in this area includes all forms of human learning with the exception of studies of conceptual development in children as it applies to the developmental process, and school learning studies that are more relevant to academic achievement, the teaching-learning educational environment, or an educational setting. Thus, learning implies concept or perceptual-motor acquisition ; the cognitive processes (thinking) that enhance or inhibit the acquisition ; the integration and transfer of learning ; and finally, the retention, memory, and recall of the information learned. This includes the various physical and motivational states that influence the learning process. Material concerning operant or classical conditioning of physical or mental processes, or the experimental design and methodology involved in conditioning procedures is classified in this area - excluding material concerning the conditioning process when applied as a therapeutic treatment or behavior modification technique in the classroom. Cognitive processes involved in decision making and choice behavior are also included.

Neurology and Physiology

This category is concerned with the neurological and physiological structures, systems, and processes of humans and animals, and their genetic determinants. It includes environmental and external effects on physiological processes during altered states of consciousness (e.g. sleep and dreaming) and neurological and sensory activity under various forms of stimulation (e.g. food intake or sensory deprivation). Material comparing human and animal neuroanatomy and physiology is included.

Psychopharmacology and Physiological Intervention

Physiological intervention on nonclinical populations of humans and animals involves the introduction of any foreign element in the body. This includes the injection of drugs and/or hormones, lesioning sections of the nervous system or other physiological systems, and electrical stimulation of the brain or motor cortex in the study of evoked potentials and electrical activity.

Infrahuman psychology

This category includes all studies of animal behavior, both in natural and experimental settings. Learning and conditioning experiments are classified in this area, as well as studies of social and sexual behavior ; motivation and emotion ; instinctive behavior, early experience, and development ; and perception. Material concerning sensory physiology, neuroanatomy, physiological intervention, or animal physiology is not classified in this category. Studies comparing human and animal behavior are jointly classified in appropriate categories unless their subject matter falls within a category that incorporates both human and animal subjects.

Developmental psychology

This category includes all studies of human development, from the time of conception through infancy, childhood, adolescence, adulthood, and old age. Motor, personality, intellectual, and perceptual developments ; learning ; social adjustment ; and aging processes affecting adults, as well as family and environmental variables that influence that development, are included. Learning as defined in this area implies concept acquisition and learning from a developmental standpoint, and excludes learning in childhood in an educational setting.

Cultural Influences and Social Issues

This category includes studies of ethnic groups within various cultures and countries, cultural and religious practices within countries, and international relations between countries. This includes the law, government, politics, economics, and social structure of nations and societies. Social structure involves social groups and processes and socioeconomic and class structures. Attitudes toward social issues and social movements arising therefrom are included as well as sociocultural factors that influence opinions. Studies of environment, ecological programs, effects of natural or man-made disasters or accidents and population are classified in this category. Social issues are society particular and time contingent, but may include such topics as abortion, sexual mores, pollution, alcohol and drug use, racial integration and busing, war, driving and safety, attitudes toward the mentally or physically handicapped, and child-rearing practices.

Social Behavior and Interpersonal Processes

This category focuses on the dynamics and processes involved in human interpersonal relations. Interpersonal relations may involve two or more people, small or large groups, but does not include relations between societies or countries. Studies of verbal or nonverbal communication dynamics within groups, social perception and the behavior motivated by that perception, social roles, strategies involved in bargaining and game playing, or attitude change resulting from group influence are classified in this area.

Communication and Language

This category is concerned with communication, from the level of speech and language to the various forms of mass media and international communications. This includes the meaning and meaningfulness of verbal and nonverbal communications, the structure of languages and speech forms, information processing and retrieval as it affects scientific communication, and advertising. Studies of art, dance, music, architecture, fashions, literature, or philosophy are also classified in this area.

Personality

This category encompasses human personality traits and processes and their behavioral manifestations. This includes emotions, and emotional reactions, defense mechanisms, cognitive style, self-concept, aspirations, and habits.

Professional Personnel

This category focuses on the education and training of psychological and medical personnel and paraprofessionals, including physicians, nurses, psychologists, therapists, counselors, social caseworkers, psychiatrists, mental health professionals, hospital personnel, and related professionals.

This includes the licensing and ethical standards of the aforementioned groups. Discussions of interdisciplinary cooperation, the utilization of such personnel, of their attitudes and personalities or career opportunities are classified in this area. Only studies concerning such personnel as the major subject matter are classified in this category. Symposia, meetings and conferences as related to professional developments both domestically and abroad are included.

Physical and psychological disorders

This category encompasses mental behavioral, and physical disorders presented apart from treatment. Mental disorders include affective disturbances, emotional states, hysteria, mania, neurosis, personality disorders, phobia, psychosis, and psychosomatic disorders. Behavioral disorders, include criminal conduct, juvenile delinquency, sadomasochism, and some personality disorders. Physical disorders include cardiovascular, congenital, digestive system, endocrine, genetic, immunologic, metabolic, musculoskeletal, neonatal, nervous system, respiratory tract, sense organ, skin, toxic, and urogenital disorders ; neoplasms ; and perceptual disturbances. Learning and speech disorders are also classified in this area.

Treatment and Prevention

This category includes material focusing on any mode of treatment intervention or discussing treatment methods on clinical populations. This includes all psychotherapeutic methods and procedures as well as the therapeutic process. Types of psychotherapy include group therapy, psychoanalysis, short-term therapy, behavior and conditioning therapies, family therapy, marathon group therapy, art and music therapy, hypnotherapy, milieu therapy, Morita therapy, and creative therapy. Studies concerning uses, methods, or research in counseling, or the therapeutic process in the counseling relationship are classified

in this area, with the exception of those studies dealing with educational and/or vocational counseling. Nonclinical population counseling includes family, marital, behavioral, group, pastoral and marathon group counseling, and social casework. Adjunctive psychotherapy techniques such as electroconvulsive shock therapy are also included in this category. Treatment implies the use of any treatment technique other than psychotherapy or counseling with any clinical population. This includes drug therapy ; speech therapy ; surgical techniques and medical treatment methods ; occupational and physical therapy ; drug rehabilitation ; vocational rehabilitation ; and mental hospital, institutional, hospital patient and outpatient services, as well as community services such as mental health clinics and medical outpatient services.

Educational Psychology

This category is restricted to material in which the educational setting is relevant. Basic areas include school adjustment and behavior ; academic achievement, and over and under-achievement in school learning and their prediction; training, functions, attitudes, personality, and organization of educational personnel (e.g. teachers, counselors, teaching aides, etc.) and school administration ; educational test administration and performance influenced by test characteristics (excluding material concerned with test validity, reliability, factor analysis, statistical evaluation, or new test descriptions) ; curriculum and educational programs and teaching methods and aids ; special and remedial education for all types of handicapped, deficient , and learning-disordered students ; and educational and vocational guidance services in a school setting. Studies involving students of all ages (i.e. preschoolers through graduate students and students in adult education programs) are classified in this area.

Applied Psychology

This category includes those studies in which the occupational setting is relevant, as well as studies on driving and safety and consumer behavior as it applies to marketing and advertising. Basic areas include vocational guidance, occupational interests, and personnel selection; job performance and satisfaction, attitudes, and aspirations ; work task analysis; driving and industrial safety and accident prevention ; engineering psychology (i.e. man-machine system, visual search of displays and targets, aircraft design and controls, manual controls, aircraft instrumentation, and other controls, and displays) organizational structure and management ; training of military, industrial, government, and other occupational groups attitudes, roles, leadership styles, and behaviors in an occupational setting ; and organizational benefits to employees, and union-management relations. Subject populations in this category include industrial personnel (e.g. utility company employees, assembly line workers, manufacturing firm employees, and lathe operators) and military personnel (e.g., army enlistees, aerospace personnel, pilots, military recruits, and tank crewmen) as well as nonmilitary pilots and aviators, government personnel (e.g. government engineers, postal workers, etc.) and other occupational groups (e.g. businessmen, policemen, lawyers, scientists, engineers, architects, appliance repairmen and commercial artists).

DERIVATIVE PRODUCTS AND SERVICES

In 1967, the method of typesetting PSYCHOLOGICAL ABSTRACTS was changed from a linotype operation to computer-driven photocomposition-a process that has provided in addition to the printed journal issues and Volume Cumulative Indexes, machine-readable tapes of their contents. The tapes used in photocomposition are converted to a format that is easily adaptable to a variety of machine configurations and systems.

Thus the machine-readable tapes of PSYCHOLOGICAL ABSTRACTS records published since 1967 have not only provided the basis for automated search and retrieval services, but have also enabled other developments dependent on computer technology. For example, the generation of a 265,000 item file indicating the frequency of occurrence of each term contained in PSYCHOLOGICAL ABSTRACTS over the last 6 years has provided the most productive single source of candidate terms for the Thesaurus of Psychological Terms. The tapes also enabled automated cumulation of 3-year cumulative subject and author indexes, which are now being offered at a lower price than would be otherwise possible. Each of these derivative products and services is described in more detail in the following sections.

Thesaurus of Psychological Terms

In developing a thesaurus of psychological terms, PSYCHOLOGICAL ABSTRACTS INFORMATION SERVICES (PAIS) drew upon the terminology in the literature, empirical data concerning subject matter areas reported to be within the competence of individual members of the behavioral and social science community, the expertise of subject matter specialists, and established guidelines for the development of thesauri. The following functional definitions are assigned to the about 4,000 terms in the thesaurus : (a) use (b) used for (c) broader term, (d) narrower term, (e) related term, and (f) array term.

Synonyms and near-synonyms are identified by use references indicating the preferred term ; the reciprocal is a used for reference. The formal hierarchical relationships between a genus and its species are indicated by narrower term and broader term cross references, while related term cross-references are used to link terms that are semantically but not hierarchically related.

Related term references serve to broaden the perspective of a researcher by indicating terms that may not have been considered, but have a bearing on the subject matter of interest. Those terms that represent an array of conceptually broad subject matters (e.g., sex) are retained in the thesaurus as array terms for which the narrower terms are not defined.

The draft thesaurus is currently being tested in PSYCHOLOGICAL ABSTRACTS indexing operations. A final version may be available at a later date, if expressions of interest in obtaining such a reference work are sufficient to justify the necessary publication expense.

3-Year Cumulative Indexes

Automated methods have replaced manual cumulation, making it possible for PAIS to offer an improved product at a lesser cost. The new indexes are formatted for compatibility with those published in the past by G.K. Hall & Company. Pages are 10"by 14", offset printed on durable acid-free paper, encased in Class A library binding.

Cumulative Subject Index to PSYCHOLOGICAL ABSTRACTS, 1969-1971

This two-volume index consolidates more than 262,574 references from 36 monthly issues of PSYCHOLOGICAL ABSTRACTS under 800 index terms in one alphabetical listing. Material indexed over the 3-year period is realigned under the most currently accurate heading. A descriptive phrase is included for each entry to enable the researcher to select from all material indexed in a general subject area those references dealing with specific aspects of that area.

Entries in the Cumulative Subject Index contain subject index terms, see and see also reference listings, subject index phrases, and PSYCHOLOGICAL ABSTRACTS volume and record numbers.

Cumulative Author Index to PSYCHOLOGICAL ABSTRACTS, 1969-1971

This one-volume index containing more than 92,148 references provides comprehensive listing of all of an author's work covered in 36 issues of PSYCHOLOGICAL ABSTRACTS, even though multiple authorship may be involved. Record numbers are included. As many as four authors are referenced for each item. Thus, all the publications of individual investigators who conduct programmatic research in collaboration with others can be easily identified.

Primary entries in the Cumulative Author Index contain up to four authors' names, title of article, an indication if the title has been translated from a foreign language, title of source document, year of publication, volume and issue numbers, inclusive pagination, and PSYCHOLOGICAL ABSTRACTS volume and record numbers. Secondary authors are listed by name only, with a cross-reference to the primary author and PSYCHOLOGICAL ABSTRACTS volume and record numbers.

PATELL and Automated Services

The machine-readable tapes of PSYCHOLOGICAL ABSTRACTS records published in 1967 through the present are made available to information centers through a service called PATELL (PSYCHOLOGICAL ABSTRACTS Tape Edition Lease or Licensing). An annual lease allows use of the tapes by the institution's personnel, while a licensing agreement permits the institution to offer services to others. The tapes are distributed in monthly, quarterly, or semi-annual reels, according to the specification of the user.

As a by-product of the PSYCHOLOGICAL ABSTRACTS tapes, PAIS has been able to offer two automated services known as PADAT (PSYCHOLOGICAL ABSTRACTS Direct Access Terminal) and PASAR (PSYCHOLOGICAL ABSTRACTS Search and Retrieval). PATELL, PADAT,

and PASAR are complementary services in that each has its particular advantages depending on the individual's frequency of need, work setting, and resources. Both PADAT and PASAR enable their users to take advantage of highly sophisticated computer program capabilities to search the PSYCHOLOGICAL ABSTRACTS data base. The system's responsiveness to Boolean logic, along with its ability to search on natural language terms as well as index codes, allows the researcher great flexibility in obtaining records that are highly relevant to the information needs he or she specifies. The user may search on all or any combination of 19 record segments (including author, author affiliation, title, source document, full abstract text, etc.). Both PADAT and PASAR enable bibliographic searching at a level of complexity and comprehensiveness never before possible-and in a fraction of the time required to perform a less satisfactory manual search..

PADAT characteristics

Through PADAT, researchers conduct information searches on a computer terminal in their own facility. This method allows direct interaction with the PSYCHOLOGICAL ABSTRACTS data base ; one may browse personally through the records, modifying search specifications as immediate feedback is obtained.

Records may be retrieved in any of 10 output modes. The output may be printed on-line if a "hard-copy" terminal is used ; otherwise, output may be printed off-line, on a high-speed device at the computer facility, and mailed to the researcher. A PADAT subscription provides access to the data base ; the researcher must possess a terminal of any of the wide variety of types that are compatible with the system.

PASAR Characteristics

PASAR is accessible by mail. The individual uses a PASAR Request Form to communicate specific information requirements following guidelines provided on the form. When needs for information arise, the researcher mails a request to PAIS at the Association's Central Office for processing on an on-line computer terminal. The intellectual burden for conducting an effective search is shared by an information specialist, who formulates specific retrieval strategies, augmenting vocabulary and other search parameters supplied by the requester. The search product is a computer printout of bibliographic citations and full texts of abstracts, which is sent to the requester.

5.1.4. BIOSIS ACTIVITIES - 1972 UPDATE

by Fd. Kennedy
BIOSIS, Director for Scientific Affairs

A total of 240,000 document references were added to the BIOSIS data bank in 1972 ; 140,000 of these were published with abstracts in BIOLOGICAL ABSTRACTS and 100,000 were published in BIORESEARCH INDEX (an increase of 10,000 more references than in 1971).

Single input - multiple output, a basic principle of the BIOSIS system, was illustrated by the fact that all of the BIOSIS publications and current awareness services for 1972 were derived from the 240,000 document references and abstracts which were added to the file. From that base, approximately 300,000 bibliographic references were "packaged" with or without abstracts, for general and special user groups. These included BIOLOGICAL ABSTRACTS and BIORESEARCH INDEX for general use and ABSTRACTS OF MYCOLOGY, ABSTRACTS OF ENTOMOLOGY, ABSTRACTS ON HEALTH EFFECTS OF ENVIRONMENTAL POLLUTANTS (HEEP) and fifteen special subject publications in the BIORESEARCH TODAY Series for the specialist user community. References retrieved for C.L.A.S.S. profiles and input to the Water Resources Scientific Information Center constituted other examples of multiple output from the base.

NEW PUBLICATIONS

HEEP-- New publications introduced in 1972 were ABSTRACT ON HEALTH EFFECTS OF ENVIRONMENTAL POLLUTANTS (HEEP) and the BIORESEARCH TODAY Series. HEEP is the result of a cooperative effort between the National Library of Medicine's Toxicology Information Program and BIOSIS.

A new type of index, marginal codes adjacent to the abstracts, was developed and prepared for each monthly issue of ABSTRACTS ON HEALTH EFFECTS OF ENVIRONMENTAL POLLUTANTS. Terms, such as gases, radiation, or the type of organism affected by the pollutant, were designated by a single letter, G,R etc. This was done to enable the reader to rapidly scan the publication for information of interest.

In the context of this publication, especially noteworthy has been the cooperation that has developed with Chemical Abstract Service in the provision of information about chemical compounds encountered in the HEEP literature for which our own chemical file has not yielded information. A system was established in which we request directly from CAS the registry number for any compound encountered which is not already in our file or readily identifiable from a CAS published index. The burden of such requests upon CAS has been slight in comparison with their own machine search activities and has leveled off to less than half a dozen compounds per week. Approximately two-thirds of the individual issue contents involve one or more chemical compounds and on the average approximately 1,000 compound registry numbers are added to the titles for permutation in the BASIC index to the HEEP issue.

A promotional program for this publication included selective mailings of special brochures, journal advertising and exhibit displays. By the year's end, HEEP sales were within projected estimates.

BIORESEARCH TODAY SERIES-- The publications in the BIORESEARCH TODAY Series are intended to be small enough not to require indexes and to be within the price range and browsing spectrum of the individual user. An arbitrary limit of one to two hundred abstracts per issue was set ; this meant that material in these publications required careful selection and considerable restraint by the editors who frequently chose abstracts for publication from

a much larger amount of available material preselected by computer. It was found to be most economical and efficient to have the make-up (mechanical preparation), printing, binding and mailing done by outside contractors, thereby substantially increasing the need for control and liaison with vendors. This increase of the total number of publications to thirty--an almost immediate doubling--made it necessary to employ and train additional staff. Each new publication required merchandising approaches unique unto itself : markets for the publications, innovative selling, the acquisition of special mailing lists, the identification of specialist user groups, advertising channels, etc.

PRIMARY SOURCES

A study was made to establish a list of the "core" serials in biology and biomedicine ; "core" serial was defined as one which produces 30 or more citations for BIOSIS' publications in a given year. BA PREVIEWS for the years 1969 - 1971 were analyzed and a list of 2,473 titles was developed. Of these, 784 could be considered as true core serials since they appeared on the core serials list all three of the years analyzed.

The complete 1972 list of 10,447 serial titles showed a net increase of 970 over the 1971 list of 9,477 due to the addition of 1,030 titles and the removal of 60. The added titles included new acquisitions of established and new publications, cross references, and 304 ceased or superseded titles which were re-entered in the list to show the past history or predecessors of presently active titles. In former years these titles had been removed from the Serials List after retention with explanatory notes for one year. This policy was reversed to enhance the list as a reference work. The number of archival serials (once covered but presently unavailable or unsuitable) now totals 712. Seven hundred twenty-six new titles were added to the List of Serials for a total of 7,661; These included 109 new publications, 225 title changes and 392 acquisitions of established titles.

COOPERATIVE TASKS

ICSU AB Common Classification Project - Work was continued with the ICSU AB Biology Working Group, in which BIOSIS and CNRS are attempting to develop a common classification scheme for biology. Representatives from BIOLOGICAL ABSTRACTS and BULLETIN SIGNALÉTIQUE have met twice since the last ICSU AB meeting to discuss and implement the comparison studies. An exchange of abstracts from both services followed, resulting in each service classifying the other's abstracts in the field of Agronomy, Horticulture, Soils and Forestry according to their own classification scheme as well as a classification derived from their understanding of the other service's scheme. From the knowledge gained in the study, a compatible classification breakdown will be constructed ; it should be acceptable and useful to both services.

BIOSIS/CAS Cooperative Project--BIOSIS and CAS announced a joint decision to undertake an extensive program of operational cooperation and coordination. They will endeavor to coordinate coverage, eliminate duplication of intellectual and other processing effort in the production of their publications and services, and develop a degree of compatibility that will permit their services to be used effectively in combination.

Some specific objectives agreed upon by BIOSIS and CAS are:

Development of a single index to library holdings of periodicals covered by the two services.

Establishment and use of a common system for identifying documents.

Development of compatible terminology authority files.

In areas of overlap, use of the same abstracts in both services, where feasible, and possible eventual elimination of duplicate publishing of abstracts in certain areas of the primary literature, accompanied by coordination of indexing policies and practices.

Adoption of common processing standards and development of compatible computer-readable, microform and printed services where feasible.

BIOSIS has been aware for a number of years that, although the conventional methods currently in use have provided for the production of excellent services at minimal cost, the time is fast approaching when, in order to meet future needs with adequate flexibility and some degree of compatibility with other systems, it would be necessary to develop a fully mechanized system.

The planning for this development could take two courses : one, to design a system specifically tailored to BIOSIS' needs, or two, to take advantage, as far as possible, of the work which has already been accomplished in this area, under grants from the NSF and other agencies, particularly by Chemical Abstracts Service.

In view of the agreed cooperative plans between BIOSIS and CAS, the second course has overwhelming advantages. The system can be redesigned and re-engineered at a fraction of the cost involved in completely new development ; the time scale for implementation can be drastically reduced and the achievement of system compatibility with CAS is a necessary prerequisite to the achievement of many of the objectives referred to in the joint announcement. The project has therefore been planned on this basis, and support has been sought from the National Science Foundation.

DEVELOPMENTAL ACTIVITIES

Vocabulary Guide--Vocabulary consolidation activities have continued and have resulted in the preparation of a 1972 edition of the Guide to the Vocabulary of Biological Literature. This edition includes 3,000 entries additional to those published in the 1971 edition. The list now includes, in addition to files centering around keywords that occurred fifty times or more between 1959 and 1968, the words and phrases constituting headings in the CROSS index. Of the original unique character strings which were originally identified, 128,000 are now represented in 8,050 consolidated keyword files which appear in the list.

The information for the publication of the Guide is maintained in a computer-readable file and the current edition has been prepared using photocomposing techniques, the composing machine having been driven by computer-readable magnetic tape. An extract from the Guide is reproduced below incorporating explanatory notes on the material included.

EXAMPLE OF ENTRIES AND COMMENTS

		CODE TO APPENDIX	FREQUENCY COUNTS
CROSS-HEADING ENTRY	*PERIODIC		1,201
	see also PAS, PERIOD, PERIODIC CYCLES		
*EXPLANATORY COMMENT	Periodic acid Schiff		
	see PAS		
*RELATED TERMS	*PERIODIC CYCLES	(CL3)	9,911
	/includes circadian rhythm/		
CORE WORD ENTRY	see also CIRCADIAN, DIURNAL, PHOTOPERIOD, LUNAR, EXTERNAL EFFECTS, LIGHT EFFECTS, PLANTS, THERMORHYTHMS-C		
*RELATED TERMS	*PERIODICALS		148
	see also BULLETIN, JOURNAL, PUBLICATION		
"SEE" ENTRY	Periodicity		
	see PERIOD, PERIODIC CYCLES		
*REFERENCE TO APPROPRIATE MAIN ENTRIES	*PERIODONTAL		842
	see also GUM, ORAL, ORAL BIOLOGY		
	*PERIPHERAL		5,488
	see also EXTERNAL, OUTER, SURFACE		

Although a listing of the most frequently used words and phrases is extremely valuable in preparing to search the BIOSIS indexes, either manually or by computer, the real power of such a guide rests in the comprehensiveness and utility of the comments and cross references. Probably the most important future activity is the enrichment of the comments. Specifications have been established for an interactive computer system to assist the vocabulary management function which should ensure that the next issue of the Guide (probably late 1974) will contain many more aids to the searcher.

Strategy Building System--Development of the On-line Strategy Building Program has continued. Demonstrations have been given to visitors to BIOSIS and at the following conferences : Pharmaceutical Manufacturers Association Science Information meeting, the Annual National Colloquium on Information Retrieval, the Gordon Research Conference on Scientific Information, and the seminar held at BIOSIS for library and information personnel. It is still hoped to establish a number of external user groups who will be invited to experiment with the system and to evaluate its usefulness.

Video Tape Equipment--There is a growing belief that video tape will become a widely used communications medium in the relatively near future and that all domestic television receivers will as a matter of course be equipped so as to be able to function from video tape as well as transmitted programs. In 1972 a television camera, tape recorder, and video monitor were acquired so that experiments in this medium could begin. For the time being the use of the equipment has been limited to the preparation of staff members for presentations at technical meetings, for communication of technical information and directly as part of seminar programs.

OPERATIONAL AND SUPPORT ACTIVITIES

Water Resources Scientific Information Center--In the second contract year with the Water Resources Scientific Information Center (WRSIC), 3000 abstracts were provided.

U.S. Army Medical Research and Development Command--BIOSIS continues to provide retrospective searches under contract.

Arbovirus Information Exchange (AIE)--To fill the specialized needs of the AIE, BIOSIS has continued its service of identifying and reproducing arbovirus material for distribution to AIE members around the world.

Bibliography for Ichthyology--Input data for the second volume of the Dean Bibliography for the 1969 ichthyology literature was keyed during 1972. The responsibility for original keying of citation information was transferred to the American Museum of Natural History. The BIOSIS programming staff derived the author index and prepared an error detection procedure for the tape. The corrected version, formatted for publication, was photocomposed.

Progress in completing the volume was delayed by problems of the taxonomic vocabulary which is being put under much more rigid control in this second and subsequent volumes as contrasted with the first volume. However, as reviews of the first volume began to appear in the professional literature, the acceptance of the bibliography as an authoritative, comprehensive and invaluable product has been recognized. Nevertheless, its contents in terms of the coverage of the literature duplicates that of the Pisces section of the Zoological Record. Attempts to determine the extent of the overlap and the impact upon the Zoological Record publication as well as the possibilities for continued funding support for the Dean Bibliography led to meetings between representatives of the Zoological Society of London, the American Museum of Natural History, and BIOSIS during the last quarter of 1972.

The Zoological Society and the University of Nottingham sent a team of a programmer and a zoologist to spend more than three weeks at BIOSIS and at the AMNH to learn the system in detail and to prepare evaluation reports contributing to possible adoption of the system not only for the publication of the Dean Bibliography by the Zoological Society but also for the use of the system for their entire index handling. They are presently evaluating various computer based systems and consider this one advantageous in that it does not derive indexing from abstract text but compiles index entries from input which not only minimizes the clerical aspects of the indexer's job but minimizes the clerical tasks themselves.

Retrospective Searches--In addition to the retrospective searches carried out under the U.S. Army Medical Research and Development Command contract, several hundred searches were completed for other organizations on repayment. The searches were requested in approximately equal proportion by government agencies, academic institutions and organizations devoted to pharmaceutical and chemical research.

Current Literature Alerting Search Service (C.L.A.S.S.)--There has been increased use of the 5" by 8" card as cutput for C.L.A.S.S. providing a facility for feedback on a perforated stub. More subscribers are therefore evaluating their search results and actively participating in profile design and revision. Because of the strong user response a computer routine has been formulated to replace the burdensome clerical activity of processing the feedback material as it is returned to BIOSIS and preparing the information necessary for profile alteration.

Standard Profiles--New titles have been added to the available Standard Profiles and a number of other topics are being reviewed for future development. The Standard Profiles are now available on 5" x 8" cards in addition to the standard paper output.

BA Previews - Current subscribers to BA Previews are based in the United States, Australia, Canada, Sweden, and the United Kingdom. Sample tapes have been provided on request to prospective subscribers in several other countries.

To facilitate introduction to the BA Previews tapes and insure their proper and efficient use, BIOSIS has encouraged tape subscribers to participate in a seminar program designed to teach profiling techniques and principles applicable to the BIOSIS data base. Preliminary instruction is based on the Profiling Guide which was completed in 1972 ; attendees are then given the opportunity to write their own profiles and run them against the Previews tapes. In 1972, several representatives of organizations subscribing to BA Previews attended these workshops at BIOSIS.

Under the auspices of the United Kingdom, Department of Education and Science, Office for Scientific and Technical Information, a one year experiment was conducted at the University of Oxford in which approximately 300 users were provided with an SDI service at no charge. The results of this experiment have been recorded in a comprehensive report which will shortly be available. Immediately following the conclusion of the experiment, OSTI established a cost recovery service.

A substantial effort was undertaken during the year to establish microfilm indexes for the first 33 years of BIOLOGICAL ABSTRACTS. Many of these indexes were out of print. Page formats and sizes differed. Over the years, indexes were handled in a number of different ways and it required the precision and patience of a first-class detective to assemble the necessary materials and see them through to successful completion. Ultimately, this resulted in more than 19,000 pages (frames) of indexes appearing in 10 microfilm cartridges which have now been made available for subscription.

In 1972 our microfilm subscription effort was amplified, and sales were increased by more than 30 %. Although microfilm as a medium represents only a modicum of our total data base revenues, this increase indicates an expanding market. The addition of the back-file annual indexes to the total microfilm package is expected to add substantially to the acceptance of this format in the future.

EDUCATIONAL PROGRAM

Emphasis in the educational programs shifted gradually during the past year to more seminars, lectures, and user workshops, with a small decrease in exhibit participation. User response for the past several years has indicated that more and more users need and want personal assistance in the use of the indexes. We believe that subscription nonrenewals may be correlated with the librarians' lack of familiarity with the indexes.

The Educational Seminar Program continued to expand in proportion to increasing requests. More than 54 meetings were scheduled in 15 states, including 41 in a 5-week tour. Two TV tapes were prepared in cooperation with the staff of a leading school of library science. These are being used as curriculum aids in teaching students how to use the indexes and to introduce them to our complete spectrum of services.

BIOSIS' educational literature was supplemented by completion, in March, of an extensively revised "Guide to the Indexes for BIOLOGICAL ABSTRACTS and BIORESEARCH INDEX". This full-color booklet contains a comprehensive description of the four BIOSIS indexes and discusses the structure and purpose of each of these with simple instructional guide-lines and examples. The Guide and its companion educational aid, THE SUBJECTS CLASSIFICATION OUTLINE, received distribution and popular acceptance throughout the world. A new "Spectrum of Services," a descriptive catalog of BIOSIS publications and services, was also distributed internationally.

The Exhibit Program during 1972 enabled direct contact with thousands of scientists, librarians and students in a variety of specialties. BIOSIS exhibited at 14 national, international and regional meetings. A redesigned exhibit booth, with push button consoles, allowed visitors to select subject profiles covering their particular areas of interest. A special rotating display of BIORESEARCH TODAY titles was also incorporated into the exhibit. The largest returns of referrals in the history of BIOSIS were derived from the exhibit at the meetings of the Federation of American Society for Experimental Biology (FASEB) and American Society for Microbiology (ASM).

DATA PROCESSING

An IBM 370 model 145 has been installed. This equipment is about 4 times faster than the earlier 360 model 40 and substantially more flexible. Its storage devices hold more than 3 times as much as those manufactured for use with the earlier model. Such auxiliary storage is particularly important considering the huge size of our retrospective file, now in excess of 40 million access points. The option made available in October for our 370/145 known as virtual memory permits a relatively small computer to operate very large programs that, heretofore, were not possible, by means of a device that meters out only those portions of large program that are immediately being used.

Changes and improvements during the year were made not only in the hardware configuration but in the operational system as well. With an eye to the possible need for ultimate compatibility with CHEMICAL ABSTRACTS that would have required a much more sophisticated system than presently, our programming and program analysis groups commenced the operating system change-over in September 1972. By normal standards the change of operating systems is an extremely complicated process.

Each program must be changed to reflect the modification and all hardware files must be reloaded. Personnel, both programming and operating, must be trained in new procedures. As a result, the OS operating system provides substantially greater control over work flow as it moves through the computer configuration. A large number of different operations may be processed simultaneously.

The main storage of the 145 was doubled to 512,000 bytes. This change was necessary to operate efficiently on an OS basis. Also, during the year, in spite of the substantially faster internal operating and transfer speeds of the 145, it became necessary to run anywhere from 1 1/2 to 2 shifts, dependent upon a number of variables. Work was begun on on-line Cathode Ray Tube Data Entry Systems with the hope that an on-line search system could be implemented in the near future.

5.1.5. BULLETIN SIGNALETIQUE DU CNRS

PROGRESS REPORT 1973

By N. Dusoulier, Editor in Chief

1. NEWS OF BULLETIN SIGNALETIQUE

Completion of automation was attained in May 1973 and the 50 sections of Bulletin Signalétique are now entered in System PASCAL.

The splitting of the section "Pathology" has been achieved in 1973 with the publication of the following specialised journals :

- Diseases of the Chest, Heart and Vessels, Vascular and thoracic Surgery.
 - Digestive Diseases. Abdominal Surgery
 - Diseases and Surgery of the Kidney and Urinary Tract.
 - Diseases of the Nervous System. Myopathics. Neurosurgery.
 - Bone and Joint Diseases. Orthopaedic Surgery.
- Traumatology.
- Blood Diseases.

The other sections of Bulletin Signalétique remained without important change except for "Water Engineering. Atmospheric Pollution" whose coverage has been extended to "Noise Pollution" and "Solid Waste Disposal".

2. NEWS OF THE PRODUCTS OF SYSTEM PASCAL

The Bulletin Signalétique published in 1972 more than 500.000 abstracts for users belonging to more than 120 countries.

Magnetic tapes are now available and a description of content and format can be sent on request.

Dissemination of standard and personal profiles started in about forty countries.

3. WORK WITHIN ICSU-AB, UNISIST AND ISO

Standards

Bulletin Signalétique continued its participation in ISO work for TC46 and TC97 standards as well as work with ISO French member AFNOR.

Cataloguing

Bulletin Signalétique participated in the final work of UNISIST/ICSU-AB Working Group on Bibliographic Descriptions and the production and testing of the "Reference Manual". It has also started the application of the Reference Manual recommendations to System PASCAL

Abstracting

Within ICSU-AB Working Group on Physics, a comparative study has been made on INSPEC and BS abstracts. The results of the study should enable us to define those information elements which should be found in a significant abstract.

Classification and Indexation

Studies aimed at establishing a world classification for each of several fields. Those on Geology and Physics are almost finished. Work on multi-lingual thesauri continued in Geology and has now started in Physics.

A detailed study of the literature of agronomy as treated by BIOSIS and BS has begun with an exchange of pertinent scope notes and definitions so each component of the working group understands the other's descriptors for the topic in question. Subsequently, BS and BA staff exchanged pertinent abstracts from a single issue of each other's publications and each classified abstracts according to the other's system. Results of this exchange will be analyzed and is expected to further illuminate the differences and similarities between the two schemes.

4. NATIONAL AND INTERNATIONAL COOPERATION

- Bureau National d'Information Scientifique et Technique (BNIST) an inter-ministerial organisation, was created in January 1973 and is concerned with the coordination in France of the whole scientific and technical information operations. The Documentation Centre of CNRS is involved in that work, particularly in the establishment of discipline and mission oriented networks and in the building of indexing and retrieval languages.

Furthermore, at the input stage, Bulletin signalétique has forty bilateral agreements with various French and foreign centres, for exchange of abstracts.

- At the European level, Bulletin signalétique participates in the work of "Comité de l'Information et de la Documentation Scientifiques et Techniques" (CYDST).

The Documentation Centre is the French correspondent of the "Système Communautaire de Documentation et d'Information

en Métallurgie" (SDIM). Our participation consisted in the preparation of the French version of the SDIM thesaurus, and in the design of the common work-sheet as well as the common rules for bibliographic descriptions. Since January 1973, completed work-sheets from about 260 periodicals are sent to SDIM.

-Studies in cooperation are underway with several countries within the framework of "Agence de Coopération Culturelle et Technique" which seeks to develop relations between French speaking countries in the field of information.

-Concerning the treatment of Earth Sciences' literature, the cooperation with BRGM continued and is being extended to Geofond (Czechoslovakia) and Geological Institute of Rumania, and the network is planning to link up with American Geological Institute and VINITI. Cooperation is also continuing with Institut de Soudure, French correspondent of the International Welding Institute.

-By a contract with UNESCO, Bulletin Signalétique catalogs, abstracts and indexes, in English, their publications in pure and applied sciences in view of entry into their system.

5. FUTURE TRENDS : PASCAL-3

With two years experience in automatic compilation and printing, Bulletin Signalétique is extending the system by enlarging entry possibilities and diversifying the number and frequency of its services in PASCAL-3 now under study. National and international cooperation is also a major aim for PASCAL's future.

In order to facilitate relations between a multi-disciplinary system and systems or networks based on subject-field or user groups, PASCAL-3 is turning toward the definition of documentary units which consist of a file plus a thesaurus. These documentary units

are of two kinds, discipline oriented and mission oriented Organisation of these units necessitates new and particular efforts in resolving problems of classification, indexation and product definition.

Indexation

Indexation based on a faceted thesaurus is on several levels.

-Macro-indexation gathers and posts items to each unit. Its elements are common to all units.

-Meso-indexation is proper to the whole of a documentary unit and will serve more particularly for SDI.

-Micro-indexation pin-points, within a specific field, important elements in an experiment, a process, etc. It will be used in conjunction with meso-indexation for retrospective search.

Classification

At the documentary unit level posting is in function of overall fields covered and the problem of forwarding into the several sections of Bulletin Signalétique is of less importance. Macro-indexation is the junction between classification and indexation. The question is to find out if, from a given classification, it is possible to control or even generate part of the indexation.

Data entry

Entry in PASCAL-3 will be as simplified as possible. Cataloguing was thoroughly analyzed when working on UNISIST/ICSU-AD Reference Manual and simple rules were defined thus facilitating automatic control of elements resulting in simplifying correction procedures, insertion of typographic constants and possibilities for entering files from other systems. Thus entry of non-CNRS data, a problem akin to that of repackaging, also requires

compatibility in cataloguing between systems on the one hand, and on the other, the development of homogeneous procedures for document description. It is here that the importance of congruity of different descriptive codes appears especially as between classification and indexation.

Product Diversification

Three-level indexation and classification possibilities imply a somewhat different output than before.

All SDI and retrospective search is based on the documentary unit. PASCAL-3 programs will permit dissemination on tape at two levels :

- rapid SDI
- monthly dissemination as now.

PASCAL tapes in UNISIST/ICSU AB format should be available in 1975 (reduced character set, full information).

Each section of Bulletin Signalétique becomes a macro-profile on one or more units and is no longer an aim in itself. In the set-theory meaning of the word, a section is defined as the set of documents which correspond to a part of the overall classification.

Indexers need no longer be attached to a bulletin but rather to another family of fields defined as parts of the same classification.

Publication of a new bulletin, or a new macro-profile, covering a new field will now become a simple matter of defining certain parameters, such as field, index type and the definition of these indexes' field, which are independent of data-base input and which do not require new specialised personnel for each new bulletin or macro-profile. Flexible solutions can thus be found for problems raised by mission-oriented fields.

5.1.6. PROGRESS REPORT

BULLETIN SIGNALÉTIQUE - BIBLIOGRAPHIE DES SCIENCES DE LA TERRE

By J. GRAVESTIJN
Bibliographie des Sciences de la Terre
Bulletin Signalétique Representative

The regular publication of Bulletin Signalétique - Bibliographie des Sciences de la Terre has been consolidated.

It may be recalled that this abstract and index journal results from the merging of Bibliographie des Sciences de la Terre issued by B.R.G.M. - Orléans, and the geological section of the Bulletin signalétique issued by C.N.R.S. - Paris in one joint publication.

The cooperation between B.R.G.M. and C.N.R.S. is characterised by a decentralisation for the indexing and abstracting work in which take part several geological surveys in Europe (GFR, Czechoslovakia, Rumania . Finland).

The input and processing for the production of the journal is centralised in the "Imprimerie Nationale".

The other services (SDI and retrospective searches) are provided separately by each partner (system PASCAL for C.N.R.S., system GEODE for B.R.G.M., system GEOWAS for the GFR).

After a slight decrease in the number of published documents in 1972 (22 000) the total volume for 1973 is expected to reach 30 000 items (Earth Sciences, Geophysics not included)

The production system is to be improved in 1974 especially the automated control of indexing terms and the automated issue of hierarchical and permuted indexes.

5.1.7. CHEMICAL ABSTRACTS SERVICE - PRESENT AND FUTURE PART IV

(See also PROC. ICSU AB 1970, pp. 145-8; 1971, pp. 45-7; 1972, pp. 115-7)

By D. B. BAKER
Director, Chemical Abstracts Service

A. PRESENT

1. BIOSIS/CAS/Ei Overlap Study

This study has entered into the third stage with work underway on Editorial Policies and Procedures - Bibliographic Descriptions. (See J. AM. SOC. INFO. SCI. Volume 24, Number 1 (1973) pp. 25-8 for a report on Part II "Overlap of Journal Articles" of this study.) It is expected that this first phase of Part III will be completed by the end of 1973 with publication of the results by mid-1974.

2. BIOSIS and CAS Agreement

BioSciences Information Service of Biological Abstracts (BIOSIS) and Chemical Abstracts Service (CAS) signed an agreement starting September 1, 1972 to undertake an extensive program of operational cooperation and coordination. These services will endeavor to coordinate coverage, eliminate duplication of intellectual and other processing effort in the production of their publications and services, and develop interconnections that will permit their services to be used effectively in combination. Studies over the past two years indicate that such cooperation, at an operating level, could lead to lower unit costs in processing information and improve the economics and utility of the services provided by both organizations. Work in the areas of development of

compatible subject terminology authority files, use of the same abstracts where feasible, coordination of indexing policies, and adoption of common processing standards and development of compatible computer-readable services are underway.

3. CAS REPORT

CAS started in October 1972 to issue a new semiannual newsletter entitled, CAS REPORT, which is designed to inform users of CAS publications and services as well as other interested parties about the developments at CAS. Each issue will contain data, technical reports, and presentations of the Open Forums at National ACS Meetings. Copies are free upon request.

4. CAS Chemical Registry System

The CA Registry System contains 2,334,987 substances as of April 15, 1973. Indexing operations during 1972 resulted in the identification of 277,563 previously unregistered chemical substances. More than three-quarters of all substances selected for indexing during 1972 were found to have been previously identified in the Registry System. Approximately 1,300,000 registry transactions are estimated for 1973.

5. CA Subject Index Alert (CASIA)

CASIA started in 1973 as a new service in computer-readable form only. CASIA consists of biweekly segments of the computer file of index entries being processed for the semiannual volume subject indexes. For each document abstracted in CA, index data are collected and included in the new service as soon as all index entries for that document have been edited, verified as correct, and recorded in the processing file. Thus, CASIA provides

the information in the volume subject, chemical substance, and formula indexes well in advance of the published full volume indexes.

Other newly announced CAS publications and services are : (a) Index Guide, (b) Registry Handbook - Name Section, and (c) Parent Compound Handbook.

Additional information on these publications can be obtained by writing CAS.

6. Conversion of CA to Computer-Based System

CAS continues the process of converting the composition of the CA abstract issues from the traditional hot-type method to a computer-based photocomposition method. This new computer composition system is part of the Unified Publication System, developed with NSF support.

In 1972, all abstracts appearing in CA sections 1-5 and 35-46 (the CBAC and POST sections, respectively) were composed by computer. During 1973, sections 6-11 and 47-59 (allied to biochemistry and polymer chemistry, respectively) will be converted to computer composition. Each quarter, other sections will be converted to computer composition, with all CA sections so composed by 1976. The following table indicates the projected number of computer-composed abstracts for the years 1972-1976.

<u>Year</u>	<u>Computer-Composed Abstracts</u>	
	<u>Number</u>	<u>% of Total</u>
1972	72,532	22
1973	126,800	35
1974	235,900	60
1975	368,100	67
1976	458,200	100

7. Some Current R and D Projects

Significant results of R and D projects which have recently been completed or are continuing include the following : (a) completion and installation of a facility for integrated data organization (FIDO), a key part of the long-term development of the total CAS general system software; (b) development of initial versions of edit programs for General Subject Index entries; (c) design extensions for producing primary journal indexes via the Unified Publication System (UFS); (d) implementation of hardware and graphic software system for use in development of an interactive chemical structure input system; (e) establishment of a compact character code for the full range of the CAS Universal Character Set; (f) establishment of a centralized library for systems and programming documentation and work manuals; (g) a computerized subscription fulfillment system and improvements in various business information systems; (h) techniques for substructure search via analysis of chemical nomenclature.

Work in process includes adjustment and augmentation of the CAS Chemical Registry System, development of an on-line bibliographic data input and editing system, and development of vocabulary control and information editing methods. A new Photon 7000 photocomposition facility was installed in January with a complete transition from the use of the IBM 2280 scheduled for December 1973. A task force has completed its studies and recommendations on the anticipated processing and computing environment of the desired 1975 CAS system and has provided a basis for continuing planning and development guidance.

B. FUTURE

1. Benefits have been obtained by CAS and others by automation of information processing in the form of reduction in unit processing costs, improved timeliness, and increased accessibility, and these benefits justify the expense of system development and installation. But, this is just a first step toward a long-term stabilization in the supply of information to the world-wide scientific and technical community. A lasting solution to information supply can come about only if unuseful overlap is eliminated across the complete range of sci/tech information-handling activities on a world-wide basis.
2. CAS will continue its efforts to share responsibility with decentralized input centers such as UKCIS and GDCh-- and other discipline-oriented services, such as BIOSIS (see A.1 and A.2), to avoid duplication and overlap of intellectual effort in abstracting and indexing, and to build a system of coordinated secondary services. This latter effort requires full definition of the boundaries of the exclusive primary coverage of each service and building of index bridges among the coordinated services.
3. The large computer-readable data bases which are distributed to the public are derived as a result of the same processing for the production of printed services. In the foreseeable future, the sales of the corresponding printed versions will continue to provide most of the revenue required for support of processing. The build-up in use of computer-readable services over the 1965-72 period offers insufficient indication to expect quick build-up of revenue from the computer-based services.

4. The evolution of large scale and broad scope, highly mechanized information transfer networks depends upon many factors to lead to viable economics, including both economy of operation and generation of adequate revenue. Much work on definitions and standards for information representation, media and mechanical details, procedures, timeliness, and accuracy needs to be accomplished to make the design and operation of such networks feasible in this decade. Much also remains to be done to establish the institutional and business agreements which extend basic feasibility into realistic and lasting operations.

5.1.8. STATUS OF COOPERATIVE PROGRAM

between

GESELLSCHAFT DEUTSCHER CHEMIKER (GDCh)

and the

AMERICAN CHEMICAL SOCIETY (ACS) in ABSTRACTING AND INDEXING

By Dale B. Baker

Director Chemical Abstracts Service

and

Christian Weiske

Editor Chemie Information und
Dokumentation/Berlin

In September 1969, the American Chemical Society (ACS) and Gesellschaft Deutscher Chemiker (GDCh) signed an agreement that covered the marketing (output) of Chemical Abstracts Service (CAS) printed publications and computer-based services in the Federal Republic of Germany (FRG) and also covered the development of input activities for processing the chemical literature originating in the FRG and inputting this information into the data base from which CAS products are derived. Both the input and output activities in FRG are under the same management and are part of Chemie Information und Dokumentation Berlin (CID/B), a division of GDCh located in West Berlin. The German center is manned by the experienced staff that formerly published CHEMISCHES ZENTRALBLATT.

Technical operations at CID/B in relationship with CAS began slowly in 1970 and have been growing steadily ever since, both in size of staff and scope of responsibility. During these years, CAS and CID/B have carried out an extensive joint program for training of staff in the complex skills of abstracting and indexing in English according to agreed upon editorial policies.

This has been a long and challenging endeavor for the staff of both organizations, but it has been interesting and very worthwhile. At the present time, staff at CID/B are performing nearly all the intellectual document analysis tasks that are performed at CAS and are doing them to the same editorial standards of quality.

The staff of the CID/B input operation, currently consisting of 18 chemists fully trained in chemical document analysis, abstract and index the chemically suitable articles from 38 East and West German primary publications and nearly all the West German Chemical Offenlegungsschriften (incompletely examined patents). This range of coverage is expected to result in the analysis of approximately 13,500 documents during 1973. Much savings in time and in duplication of intellectual efforts are realized through this cooperative effort.

From the primary chemical literature acquired, CID/B staff select those individual documents which are suitable for abstracting and indexing in CHEMICAL ABSTRACTS. Complete bibliographic data, abstracts, and issue keyword index entries are prepared for each document selected. All non-substance or general subject entries for the CA volume indexes are selected and formatted, as well as chemical substance name entries. However, CID/B staff do not supply CA-preferred index names to the substances at present. The naming and registration of chemical substances is done at CAS because the chemical compound registry system, now with over 2.2 million substances, can automatically handle over 75 percent of the compounds reported in the literature each year.

At the present time, all data prepared for input to CAS data files are transmitted to CAS in the form of "hard" copy. There, however, is a substantial effort underway at CID/B and CAS to automate these data collection and transfer processes. Test data have already been sent by CID/B to CAS in computer-readable form, and it is expected that by the end of 1973, fully edited and machine-validated bibliographic data, abstract text, and keyword index entries will be input on a regular production basis to CAS systems in computer-readable form. During 1974, this procedure will be extended to include general subject and chemical substance index entries.

On the output side, CID/B functions as an information center using CAS computerized data bases for serving the German scientific community. In this capacity, CID/B staff run approximately 500 profiles on CA CONDENSATES for users within the German community. There are also plans to provide SDI services from additional data bases as the feasibility and need arises.

There is a regular exchange of staff visits from CID/B and CAS and representatives of GDCh and CID/B participate regularly on the Advisory Board to CAS. Financial arrangements include payment or credit for input by agreed upon policy and the computer-based output services are covered by normal licence contracts.

The United Kingdom Chemical Information Services (UKCIS), associated with the Chemical Society of London and operated out of the University of Nottingham, is the third member of this developing international collection and dissemination network.

5.1.9. REPORT OF ENGINEERING INDEX'S ACTIVITIES

1972 - 1973

J. E. CREPS, Jr.
Acting Director, Engineering Index, Inc.

ENGINEERING INDEX'S EXECUTIVE DIRECTOR WOODS RESIGNS

Bill M. Woods, Ei's Executive Director has announced his resignation as Executive Director of Engineering Index, Inc. on March 25, 1973 for reasons of personal health.

Mr. Woods, who is highly regarded and widely known, both nationally and internationally, advanced the cause of Engineering Index immeasurably throughout his relatively brief, but salient stewardship. His wise counsel, dedication, boundless energy, friendly and persuasive demeanor will be greatly missed in Engineering Index's future deportment in the world of information.

Under his able direction as chief operating executive over the last five years, Engineering Index has experienced an extraordinary fifty per cent increase in the amount of technical information published, as well as a noteworthy improvement in the quality and variety of the services that Engineering Index renders. Due, in large part to the efforts of Mr. Woods, Engineering Index has thus become one of the world's leading information bases.

Bill Woods came to Engineering Index as its Executive Director on March 11, 1968. Formerly, he was the Executive Director and Secretary of the Special Libraries Association from 1959 to 1967. After receiving his Master of Science degree in Library Science, he remained and served as the Map and Geography Librarian and Assistant Professor of Library Science at the University of Illinois from 1949 to 1958.

He has also given freely of his own time for the advancement of information science by acting as Adjunct Professor at the C.W. Post Center of Long Island University since 1972. His contribution of numerous articles, reviews, and reports have appeared in books, encyclopedias, and journals including the Library Journal, Library Trends, Special Libraries, etc. in the intervening years.

In 1968, Mr. Woods saw the implementation of his management study which directed an Engineering Index management reorganization and the institution of a long-awaited computerization of Engineering Index's internal production system (1972). The results of this extensive endeavor are now advancing the timeliness of Engineering Index Services; making provision for new and improved services; and will facilitate greater coverage of technical literature in the near future. Further, he presided over the establishment of the first computer-readable version (COMPENDEX) of the Engineering Index information base (1969). Mr. Woods also directed the completion of a significant study (1971) in the electrical/electronics field in cooperation with the Institution of Electrical Engineers (London) and the Institute of Electrical and Electronics Engineers (New-York) that aided in the development of an improved Engineering Index controlled indexing vocabulary and classification system. Additionally, he was instrumental in the development of the Overlap Study Agreements (1970) between Bio-Sciences Information Service, Chemical Abstracts Service, and Engineering Index, Inc. Parenthetically, two phases of this Study have been completed and published to date.

For the advancement of all concerned, he was an inveterate believer in working in unison with other organizations that had similar interests. To this end, Bill Woods served as President of the National Federation of Abstracting and Indexing Services (NFAIS) in 1971. Further, he established many rewarding professional relationships with engineering societies and was active (usually as an officer) in the American Association for the Advancement of Science (AAAS); American Society of Information Science (ASIS), Association of Scientific Information Dissemination Centers (ASIDIC), Information Industry Association (IIA), and the Special Libraries Association (SLA).

On the international front too, Mr. Woods moved Engineering Index forward to a great degree in organizations such as the European Association of Scientific Information Dissemination Centers (EUSIDIC), International Council of Scientific Unions--Abstracting Board (ICSU-AB), UNISIST, and the World Federation of Engineering Organizations.

The results of Mr. Woods' forward-looking leadership have advanced not only Engineering Index, the organization, but more importantly have provided better and additional engineering information for more users of Engineering Index Services than ever before. His feeling was that the availability of a vital service such as technical information must be made known everywhere. He then set this as a personal goal and made it a constant concern at Engineering Index.

- American Society of Engineering Education (ASEE)

COMPUTERIZATION OF THE ENGINEERING INDEX PRODUCTION SYSTEM

In 1972, Engineering Index Inc. institutes its new internal production system. This is the result of a conversion from conventional techniques and equipment to an innovative and versatile computerized mode of operation.

The project, dubbed COPS, for Conversion of Production System, utilizes the latest available equipment and technology for the basic data input by a direct key-to-tape process. Unique on the keyboard equipment selected by Engineering Index are individual function keys that allow for the easy entry of data elements (or record-segment identifiers) such as the title, author, citation, abstract, etc. A separate set of keys permits the entry of special characters, i.e., mathematical symbols and the Greek alphabet, without the need for a complicated coding system.

All the input data is entered on 1/8" magnetic tape, which is stored in cassettes. These cassettes are then taken from the several keyboard devices and subsequently "pooled" onto 1/2" computer tape reels. Through a series of sophisticated computer programs, a "master file" is created which then becomes the input for additional processing. This, in turn, provides the photocomposed, printer-ready output required in the final production of the Engineering Index Annual and Monthly. Thus the "master file" on magnetic tape serves as the information base for all Engineering Index services including the COMPENDEX computer-readable tape service and the weekly selective card service, CARD-A-LERT.

The immediate and tangible results of this modernization changeover and improvement are initially reflected in the October issues of the Monthly and the COMPENDEX tape service. This accomplishment, at this particular time, permits an operational as well as an experimental

period covering the next three months (October through December). This will assure that all aspects of the system are at, or approach, the desired levels of performance through field testing and any required "debugging". During this time interval, comments and recommendations of users are earnestly solicited for possible further improvements. Users who wish to furnish any information in this regard are requested to contact Engineering Index's Marketing and Business Services Division. Thus, if any changes are deemed necessary, they may be incorporated prior to the finalization of the system in January 1973.

It should be noted that the October issues of the Monthly and COMPENDEX will reflect a smaller number of abstracts and other items than is normally produced. This is the result of necessary adjustments required in the physical conversion of the production operation. It is emphasized, however, that the volume of input in the November and December issues will be such that users will receive the full complement of 85,000 abstracts and other items for the year.

The successful completion of the COPS project provides the users of Engineering Index's informational services with the following principal advantages :

A one-third reduction in the time-lapse factor has been accomplished. Hence the time period covering the production process--originally four to six months--is now diminished to six to eight weeks. This answers, to a large extent, the most frequently voiced request of users in recent years and alone justifies the entire cost of the extensive project.

Secondly, a highly improved page/record display has been achieved. Features such as new typography and layout make Engineering Index services visually more appealing and provide for easier reading and comprehension. As evidenced on the following pages of this Monthly issue, the Engineering Index abstract number is now presented at the beginning of each abstract and is sequentially numbered ; the title of the journal article is highlighted in capital letters ; and the author, affiliation, and bibliographic citation is placed in a separate block at the end of the abstract.

Further, it is projected that the establishment of a store of computer-readable information now, will permit the potential for future service improvements such as subsets and specialized indexes that may be retrieved, quickly and easily, upon demand.

These user-oriented benefits are the result of much planning, endeavor, and financial investment by the management of Engineering Index. Beginning as far back as 1968, a commitment was made to establish an integrated, highly flexible information processing system. With partial support from the National Science Foundation, under Grant Number 28502, this concept, which has a price in excess of \$ 200,000.00, is now bringing about the desired transfer of engineering information to the user--better, faster, and easier than ever before.

This advanced system is but the first step in an on-going program. Already contemplated are further improvements that will encompass greater efficiency and timeliness, increased coverage, and the institution of additional services.

NEW AND IMPROVED MARKETING SERVICE

As a not-for-profit, educational corporation dating back as far as 1884, the prime motivation and continuing concern of Engineering Index, Inc. (EI) has necessarily been service. In the recent past, various advancements have been made in the editorial aspects of our work. Just recently, our internal production facilities have been computerized. Now, our latest accomplishment--two new marketing assignments have been consummated. They are as follows :

Firstly, an agreement has just been concluded with Princeton Microfilm Corporation (PMC) for the sale and lease of the Microfilm Edition of the Engineering Index Annual. Through Princeton Microfilm Corporation's extensive and intimate contact with a large percentage of Engineering Index's potential users and by modern marketing techniques, it is felt that the advantages of the Engineering Index on microfilm will be brought to the attention of a vast new audience.

The complete name and address of this marketing agent is :

Mr. Franklin D. Crawford
President
Princeton Microfilm Corporation
Alexander Road
Princeton, New Jersey 08540

Secondly, on the international scene, Engineering Index has also appointed Thompson, Henry & Associates as marketing agent for Engineering services throughout the United Kingdom and Ireland.

Specifically, this organization, under the supervision of Mr. Geoffrey C. Thompson, Managing Director, is responsible for the handling of inquiries, order fulfillment, customer services, and consultation for Engineering Index subscribers and other interested parties.

This action has been taken, principally to meet the growing need of subscribers in the United Kingdom and Ireland for better and faster service. Acting as a central clearinghouse, it is expected that Thompson, Henry Associated will also effect economies to offset constantly rising fulfillment costs and additionally improve handling capabilities for delivery of Engineering Index services.

There will be no appreciable effect of this appointment on bookdealers or subscribers presently handling or who will be receiving 1973 subscriptions. However, Thompson, Henry Associated, as an extension of the marketing arm of Engineering Index, is providing personalized assistance now in all phases of transactions with Engineering Index.

The complete name and address of this marketing agent is :

Mr. Geoffrey C. Thompson
Managing Director
Thompson, Henry Associated
The Bear House
London Road
Windlesham, Surrey
UNITED KINGDOM

These marketing efforts are part of an ongoing user-oriented improvement program at Engineering Index with the expectation of similar assignments in the near future.

SUBJECT HEADINGS FOR ENGINEERING (SHE)

SHE is an alphabetical list of terms currently in use by Engineering Index technical editorial specialists as a controlled vocabulary for indexing transdisciplinary literature of engineering and related sciences. As an authority list, SHE has been regularly up-dated and revised for over three quarters of a century to assure conformity among the several services of the ENGINEERING INDEX which include the standard Annual volumes, Monthly issues, weekly CARD-A-LERT selective Divisions and the relatively new COMPENDEX (COM-puterized ENgineering INDEX).

SHE is the basic tool for indexing using the nomenclature derived from the literature of the many specialized areas of engineering and technology. Profuse cross-references and scope notes aid both the editors and users in searching Engineering Index contemporary and background information.

Engineering Index Editors scan the world literature for new terms, phrases, or concepts which can be captured from text used by individual authors and filed on magnetic tape as "free language terms". Content of this tape is searched regularly for additions or revisions to SHE, a system which provides constant update of the language of engineering.

The alphabetical arrangement of MAIN HEADINGS and descriptive Subheadings used in each of the several Engineering Index services conforms to the same word-by-word alphabetizing used in SHE.

The new edition contains a noticeable increase in MAIN HEADINGS relating to electronic subjects as a result of a study "Development of Indexing Vocabularies in Electrical Engineering" correlating terms in SHE with those of INSPEC. Under a grant from the National Science Foundation the vocabulary pertaining to automatic control, computer terminology, electronic devices, and materials has been brought as near compatibility as possible for

both British and American practice.

Engineering Index continues to examine the content and mode of presentation of SHE to enhance its utility as an indexing tool for Engineering Index inhouse editors, and as a guide to Engineering Index practice for subscribers in their searching of the Engineering Index data ^{base} either manually or by machine or in selecting their profiles of interest for the CARD-A-LERT selective information service. Engineering Index invites suggestions, questions, or criticisms regarding SHE, and assures that comments are seriously evaluated.

CARD-A-LERT SERVICE MODERNIZATION

Since its inception in 1929, CARD-A-LERT, and its predecessor, The Engineering Index Card Service, have served the engineering Community with a useful and comprehensive SDI (Selective Dissemination of Information) and "current awareness" service.

As with all services, however, constant improvement has been necessary and desirable. Thus, Engineering Index has released its latest version of the refined and up-graded CARD-A-LERT Service to meet the modern-day needs of the engineer for a better and faster service. This accomplishment has been made possible by the recent conversion of Engineering Index's internal production system from conventional techniques and equipment to an innovative and versatile computerized mode of operation.

CARD-A-LERT has provided the engineer weekly with 3" x 5" library-sized cards that contain preselected abstracts of engineering information, pertinent to his area of responsibility or interest. By scanning these items, he can determine which original articles (from journals and other publications) he wishes to obtain for further study.

Specifically, the following significant improvements have been made ;

The time period covering the physical composition of the CARD-A-LERT Service has been approaching six to eight weeks rather than four to six months as issued previously.

The elements within the abstract have been rearranged and highlighted in a different manner for easier location and scanning of topics of principal interest.

Photocomposed copy with varied typefaces has been instituted to provide a visually more appealing display for easier reading and comprehension.

Four new Divisions have been included in the already / existing 38 Groups and 171 Divisions of engineering due to increased interest and a greater generation of literature in these particular fields and to provide increased selectivity among users. These Divisions are entitled :

Miscellaneous Properties and Tests of Materials

Electric and Magnetic Materials

Chemical Products Generally

Solid State Physics

Finally, a new catalog detailing the available selections of the complete CARD-A-LERT- Service has been issued recently and is available, upon request, from Engineering Index's Marketing and Business Services Division.

With these advancements, CARD-A-LERT should create increased usage among present subscribers and appeal to an even wider audience than previously. Thus, CARD-A-LERT will be fulfilling its role as "The Selective Engineering Information Service."

REFINEMENT OF THE ENGINEERING INDEX PRODUCTION SYSTEM

As announced in the October issue of the Engineering Index Monthly, Engineering Index, Inc. has instituted the conversion of its internal production system from conventional techniques and equipment in use for over a decade to an innovative and versatile computerized mode of operation.

To further refine and update this new system, The National Science Foundation has awarded an additional Grant, Number 36337, in the amount of \$ 128,000.00. These funds (along with additional financial support from Engineering Index) are specified for the project entitled, "COMputerized Production Operation System Extension (COMPOSE)" The effective date for work on this Grant will be January 1, 1973 and will continue for approximately eighteen months.

This project is the second in a projected series of a long-range Engineering plan called, " Transdisciplinary Engineering Information Program ". It will allow for the modification and extension of the input and output operations, improve quality control, and increase capacity and efficiency throughout the system.

In particular, this project involves the following tasks :

Task I -- Input Processing System.

This task encompasses the overall systems design to incorporate Task II through Task V.

Task II -- Classification of Primary Materials.

This task is designed to optimize the use of the capabilities of both editorial and clerical staff to permit more efficient handling and control of primary materials. A classification criteria manual for evaluating and grading primary material will be developed. A journal control system will be designed and implemented. One aspect of this system will be to maintain information on all primary materials • covered by Engineering Index and the publication frequency of each. As material is processed it will be passed against the "inventory of work to be done." By using "exception reporting techniques" the system will advise when required issues have not been processed. The system resulting from this task's accomplishment will allow reduction of manual effort while permitting a greater quantity of primary materials to be handled with increased quality control during the production process.

Task III -- Reference and Control File Update and Maintenance System.

This task will encompass putting Engineering Index's SHE (Subject Headings for Engineering) and PIE (Publications Indexed for Engineering) into the computer-based production system. SHE in the system will allow the inputting of MAIN HEADINGS and Subheadings in a numeric coded form. The computer system will check validity of Subheading to MAIN HEADING, spelling of both, and insure a higher degree of service quality of output.

- These primary materials are furnished by the Engineering Societies Library (ESL), a separate organization that adjoins Engineering Index, Inc. (EI). Implementation of this improved system should further maintain and enhance the excellent working relationship that now exists between ESL and Engineering Index.

PIE in the system will allow inputting of journal titles by use of CODEN and/or ISSN's. Certain other repetitive type bibliographic information will also be included. These system improvements will reduce both editorial effort and keystroking on the part of inputting clerical personnel while effecting several validity checks and exercising increased quality control of system-generated services.

Task IV--Photocomposition Edit Routines;

This task is designed to create a master file of all necessary Engineering Index service information display units, such as title, authors, headings, etc., and to allow the selection of segments and creation of regular services and specialized subsets of the master data base. It will provide an editing capability on the master file just prior to photocomposition. Included will be the ability to make any requisite changes to the master file without going back and correcting the initial input records. This capability will be especially useful for production of the Annual when twelve monthly issues are merged into one publication.

Task V--Output Editing.

This task will permit the development of output editing routines to create specialized indexes to the contents of Engineering Index services. As man's knowledge continues to grow, the importance of inter-relationships of several discipline segments originally considered separate, became known. So also, as Engineering Index's data base broadens and diversifies to cover a greater portion of the world's engineering material, it must have the ability to relate the thousands of individual items to each other and produce the information tools so necessary for continued engineering technology advancement. This task will also provide the mechanisms for a final quality control check on the material

which is being outputted. It will be developed to take advantage of increased computer and composition capabilities as they become available.

There are many significant benefits to be realized by the implementing of these tasks.

For Engineering Index internally, the project will :

Maintain a higher degree of cognizance and control over the primary materials used to create Engineering Index's services.

Restrict the use of highly qualified professional personnel to the intellectual effort for which they are employed and relieve them of necessary but highly repetitive and clerically-oriented work.

Reduce the amount of clerical effort needed at several steps of production. In some cases the clerical function will be enhanced by utilizing today's machines and methods thereby opening up personnel growth opportunities by training and accomplishment.

Utilize the computer and its associated peripheral equipment for the functions it is designed and best suited to perform and continue to allow humans to accomplish the intellectual effort which they do best.

Permit extended coverage in Engineering Index services into additional areas of engineering necessary to satisfy the needs of constantly changing information-seeking users.

Allow for exercising greater quality control thereby reducing the amount of re-work necessitated by production personnel.

Enable Engineering Index to generate additional search tools (indexes), within an acceptable economic framework and to facilitate service utility, thereby broadening its customer base and user-service acceptance.

Move towards a more comprehensive, accurate, and compatible data base permitting increased use in inter-active and network systems for search applications with resultant increased user satisfaction.

Maintain production costs in line so that the prices for Engineering Index 's services do not go above customer's willingness or ability to pay.

For the users of Engineering Index's services, the project will provide for :

More detailed and comprehensive search tools to facilitate the location of pertinent information..

Expanded coverage of existing subject areas and extensions into fields of significant engineering and public interest. (An example would be greater emphasis on environmental engineering).

Services generated with a greater quality control resulting in increased information accuracy. "Noise" will be eliminated in computer-based services.

Enhanced services resulting from professional personnel spending full time on intellectual efforts.

Continuance of the availability of Engineering Index's services whose informational value exceeds the prices charged.

By these user-oriented, modernization techniques, Engineering Index is advancing its services in the engineering and informational fields with all possible haste, i.e., as fast as the state-of-the-art in technology and the availability of funds will allow.

5.1.10. REPORT ON INSPEC ACTIVITIES

by D.H. BARLOW
Director, INSPEC

Since the last report made to the ICSU AB at its meeting in Ustaoset, a large number of innovations have been made in the INSPEC operations. These include :

- a) the successful implementation of the new classification and thesaurus operation
- b) the setting up of an operational on-line retrieval service RETROSPEC 1 covering a portion of INSPEC's total database
- c) the development of an on-line journal acquisition system which is now undergoing operational tests
- d) the award by OSTI to INSPEC of a number of research grants
- e) the introduction of a new service on behalf of member countries of the INIS operation
- f) the experimental introduction of INSPEC's Tailored Abstracts service and the launching of a new service covering Information Science
- g) the introduction of the ISMEC service in Mechanical Engineering
- h) preparation of the 1969-1972 Cumulative Indexes.

As a background to these innovations, INSPEC's production operation located at Hitchin has during the past year, being operating smoothly and processed in 1972 the following number of items in the three disciplines then covered by INSPEC :

Physics	85,185
Electrotechnology	42,248
Computers and Control	<u>26,641</u>
	154,074

during 1973 with the introduction of the new ISMEC service the throughput is expected to rise to 170,000 items.

In February 1973 the first INSPEC tape workshop was held with participants from countries presenting their experiences in the use of INSPEC tapes which are being used in 14 countries of the world.

Other more routine innovations include the extension of INSPEC's standard profile TOPICS service to cover 72 categories.

Classification Switchover

On January 1st 1973, a complete changeover in classification procedure was made by introducing the new unified classification to replace the three individual sections that had been used for the separate disciplines. The philosophy of the new unified approach is that a single intellectual classification operation would be performed and computer posting of the entry would automatically follow allocating the item to the correct publication on the basis of that publication's classification profile.

At the same time development was completed on the INSPEC thesaurus which may be used either :

- (i) as a controlled-language system for co-ordinate indexing and manual or mechanised searching
- (ii) as a natural-language aid at the search stage for suggesting new terms and expanding the concepts in a natural-language search profile.

In its controlled language mode the thesaurus forms the basis of the headings used in the six-monthly subject indexes of the three abstracts journals and is included as a search element in the INSPEC magnetic tape service. It is also extensively used by INSPEC as a natural-language aid since INSPEC's mechanised SDI services and experimental retrospective search systems are primarily based on searching

free-index terms. The thesaurus was developed using a vocabulary development file in batch mode and the analysis of the free-index terms together with frequency of occurrence data was the most useful source of candidate terms for inclusion in the thesaurus. Computer programs were developed for validation, correction and automatic reciprocal generation and checking so that much of the manual clerical effort was eliminated. The publication "The INSPEC Thesaurus" contains three sections : an alphabetic display, an hierarchical display, and a classified listing of thesaurus terms.

These are described briefly below :

Alphabetic Display

This display contains over 4,000 main terms (preferred terms) and approximately 3,000 lead-ins covering synonyms and other forms. The relationships used in the thesaurus are : USE, UF (used for), NT (narrower term), BT (broader term), RT (related term), TT (top term of hierarchy), CC (unified classification code).

the "TT" relationship therefore enables the user to enter the complete hierarchical display, since the BT and NT relationships give only one level up-and-down in the hierarchy.

Each main term in the thesaurus has assigned to it one or more 6-letter unified classification codes (CC) from the unified classification scheme except in the case of very general main terms which cannot be allocated to any specific classification category. In this way the alphabetic display acts as an index to the classification scheme used in the "Classified Listing of Thesaurus Terms".

Hierarchical Display

All the hierarchical chains contained in the thesaurus are arranged in alphabetical order of the top term of their hierarchy. These top terms (TT) are given in the alphabetic thesaurus so that the latter can be used in conjunction with the hierarchical display.

Classified Listing of Thesaurus Terms

In this arrangement the main terms in the thesaurus are listed alphabetically beneath each unified classification category according to the codes assigned under CC in the alphabetic thesaurus.

RETROSPEC 1

In June 1973, a new computer-based, on-line, retrospective search system covering the field of computer & control engineering became available for general use.

This system which has been operated very successfully for the past three months by INSPEC staff is named RETROSPEC 1.

The Retrospec 1 Data Base

The data base has been specially selected from the INSPEC Computer and Control data base and consists of some 20,000 references to published papers received at INSPEC over the last three years.

For maximum utility, the selection has been made from 145 leading English-language journals in these subject fields so that the references retrieved will be easily available through libraries.

Retrospec 1 Subject Scope

The data base is divided into four broad subject areas :

- System & Control Theory
- Control Technology
- Computer Programming & Applications
- Computer Systems & Equipment

Each of these areas is further sub-divided into approximately five sections, making a total of 21 specific subject partitions.

Depending on the enquiry, the scope of your search can be limited to a single partition, two or more selected partitions, a broad-subject area - or indeed one can search the whole data base.

Experience shows that the most enquiries can be satisfied within a single partition : and RETROSPEC 1 has been structured in this way to give fast, low-cost on-line retrieval. Typical search costs range from 50p to £3.

Cybernet Timesharing System

RETROSPEC 1 uses a modified version of the Cybernet FREESearch system and is operated through the bureau services offered by Cybernet Timesharing Limited.

On-line journal acquisition

An experimental journal acquisition has been developed and is being operationally tested alongside INSPEC's manual operation. Basis of the system is the file of journals scanned by INSPEC, any one of which can be displayed on a VDU. Included in the record is the past history of receipt of the journal so that confirmation of whether the current copy is the correct one can be made instantly. A future option is that a local printer unit may print out header records and routing slips to be attached to the journal.

OSTI Awards

Integrated research and development programmes involving the Information Service for the Physics and Engineering Communities (INSPEC) and the United Kingdom Chemical Information Service (UKCIS) have been agreed, and further awards have now been offered to OSTI to the organisations concerned - the Institution of Electrical Engineers and the Chemical Society. Each centre will have a "rolling programme" of research consisting of individual projects which may be submitted to OSTI at any time during a three-year period starting this fall. As far as possible, the two programs are being co-ordinated to avoid duplication of effort and to ensure that the best use is made of the resources of both organisations. Most of the projects for which OSTI has awarded grants have therefore been designed as joint projects; in three of these INSPEC and UKCIS will carry out complementary research of particular importance to both centres, and in the rest work conducted by one centre will be reinforced by a consultancy service provided by the other.

In the first joint project, "automatic aids to profile construction", the UKCIS scheme for semi-automatic profile construction based on word frequency analysis will be extended to include word pairs and word fragments. Programs will be developed to provide an interface with the UKCIS Inverted File Search (INFIRS) system. In complementary studies by INSPEC algorithms will be developed and software implemented for the automatic expansion of profile terms by use of the INSPEC

thesaurus. Both organizations will use sample SDI (Selective Dissemination of Information) profiles generated by these techniques to compare their cost and performance with that of profiles compiled by conventional methods. The second joint project will involve parallel studies on "search-strategy variations", in which INSPEC and UKCIS will compare a range of search strategies of varying degrees of sophistication in terms of cost, performance and ease of use. SDI notifications, based on a range of profiles which incorporate the different search strategies, will be evaluated by sample groups of users in the subject fields served by UKCIS and INSPEC. The third joint project will complete the development by INSPEC of a generalised SDI search system for ICL 1900 series computers, including production of inverted files for retrospective searching; and also the continued development by UKCIS of the INFIRS system by inclusion of additional facilities particularly those necessary for full retrospective searching.

In the first of the two projects concerning the merging of data bases, UKCIS, with INSPEC acting in a consultative role, will develop techniques for identifying documents uniquely, investigating the problems of overlap and difference in currency, and developing a system for merging data bases. In the other project INSPEC will study the merging of the US "Government Report Announcements" tapes with the INSPEC data base. INSPEC will also explore the feasibility of automatic or semi-automatic methods of generating document descriptors and will continue previous studies on semi-automatic methods of updating the INSPEC thesaurus.

INSPEC projects with UKCIS acting in a consultative role include an investigation of methods of ranking selective dissemination of information and retrospective search outputs, with assessment of their performance and acceptability to users; further development of an on-line generalised input and editing facility; and evaluation of an experimental on-line search system in which display data will be stored on ultrafiche and recalled by means of a computer-controlled terminal.

For these projects, grants totalling £135,000 over the period August 1972 - July 1975 have been awarded to INSPEC, and £ 76,000 to UKCIS over the period October 1972 - September 1975.

INIS Operations

In December 1972, the office of the Netherlands Commission for the provision of Nuclear Information and INSPEC (the International Information Service in Physics, Electrotechnology, Computers and Control of the Institution of Electrical Engineers) signed a contract that opens up a new activity for INSPEC. Under the contract, INSPEC will provide the Dutch physics input as part of the total Dutch input to the International Atomic Energy Authority's International Nuclear Information System (INIS).

The Netherlands have decided to fulfil their obligations as a member of INIS by preparing their total input on a decentralised basis; INSPEC will therefore, under this new contract, be handling only the physics part of the input; other organisations in Holland will be handling the other parts of the input. The contract has been drawn up in terms that obviate any duplication that might have arisen from such a decentralised input arrangement.

In the first instance, the contract will run for one year. During this time it is estimated that some 4,000 items of physics information will be supplied to INIS. The work that INSPEC is undertaking involves the selection, descriptive cataloguing, classification and indexing of articles to INIS standards, the keyboarding of the data and the production of magnetic tape to the format required by INIS. In addition, abstracts will be prepared and provided as separate sheets.

It was at the European Nuclear Energy Agency (ENEA) meeting in Paris in 1972 that the first discussions took place on the suggestion that INSPEC should provide certain input material to INIS on behalf of some of the 41 member states. Negotiations in the United Kingdom and later in Vienna at the INIS Liaison Officers' Meeting finalised this contract with the Netherlands. Discussions are being conducted along similar lines with a number of other countries resulting in contracts for supply of INIS material to Denmark, Sweden, Austria and Switzerland.

ISMEC - A new service in mechanical engineering

A new range of international information services covering all aspects of mechanical engineering, including production engineering and engineering management, is to be available in July 1973. The information services are to be produced jointly by the Institution of Mechanical Engineers and INSPEC, the International Information Services Division of the Institution of Electrical Engineers. These services, to be known as ISMEC (Information Service in Mechanical Engineering), will combine the professional expertise of the IMechE and the technical knowledge and experience of INSPEC which operates the world's largest computerized information service in the English language in the fields of physics, electrical engineering, electronics, computers and control.

A technically-qualified team will select material from the world's mechanical engineering journals and conference publications. This material will be classified, indexed and processed for entry on to a computer data base, from which all the ISMEC services will be provided.

The basic information product from ISMEC will be the INSMEC Bulletin, a twice-monthly current awareness publication. ISMEC Bulletin will provide mechanical and production engineers, engineering managers, librarians and information officers with speedy and selective access by subject to world-wide developments in all aspects of mechanical engineering. It will provide information on recently published articles from the world's technical literature. Each record will contain the article's title, the author's name(s), the organisation at which the work was done, and details of the source of publication.

Twice yearly ISMEC will publish cumulative author and subject indexes which will compliment the current-awareness character of ISMEC Bulletin by enabling the user to retrieve easily details of previously-published work.

ISMEC will also provide a Magnetic Tape Service which will cover all items published in the ISMEC Bulletin and will give additional information including subject indexing in depth.

1969 - 1972 Cumulative Indexes

Cumulative Author and Subject Indexes, for the four-year period 1969-1972 for the three INSPEC Abstracts Journals : Physics Abstracts, Electrical & Electronics Abstracts and Computer & Control Abstracts will be published early in 1974. Containing more than half a million abstracts, the new Indexes will be larger and more comprehensive than ever before. Production of these Indexes presents a problem in the manipulation and processing of the data into a 16-column Index set, a task INSPEC aims to complete by March 1974.

The figures below show the size of the operation :

Physics Abstracts	(Author Index	3,500 pages - 500,000 entries
	) Subject Index	5,500 pages - 750,000 entries
Electrical & Electronics Abstracts)	(Author Index	1,400 pages - 250,000 entries
	) Subject Index	2,000 pages - 250,000 entries
Computer & Control Abstracts	(Author Index	750 pages - 150,000 entries
	) Subject Index	1,000 pages - 150,000 entries

INSPEC Reports

As part of a general programme of disseminating the fundamental research work done by INSPEC in information science and allied fields, a series of reports have been issued in the last year, details of which are given in the attached list.

LIST OF INSPEC REPORTS AVAILABLE

<u>Report N°</u>	<u>Title</u>	<u>Author(s)</u>
R70/1	Comparative Evaluation of Index Languages : Part I Design	T.M. Aitchison J.M. Tracy
R70/2	Comparative Evaluation of Index Languages : Part II Results	T.M. Aitchison A.M. Hall J.M. Tracy K.H. Lavelle
R70/4	The Use and Value of Citations : A State-of-the-Art Report	A.M. Hall
R70/5	Laboratory Evaluation of Printed Subject Indexes : Part I Design and Methodology	T.M. Aitchison K.H. Lavelle A.M. Hall
R71/6	SDI Investigation Report (5 volumes)	P. Clague
R72/7	User Preference in Printed Indexes	A.M. Hall
R72/8	Case Studies of the Use of Subject Indexes	A.M. Hall
R72/9	Comparative Use and Value of INSPEC Services	A.M. Hall
R72/10	Development of an Integrated Indexing and Classification System	B.J. Field
R72/11	The Effect of the Use of an SDI Service on the Information Gathering Habits of Scientists and Technologists	T.M. Aitchison P. Clague A.M. Hall
R73/I2	Optimum Degree of User Participation in SDI Profile Generation	L. Evans
R73/I3	An experiment in the batch processing of retrospective searches	H. Wilman A.M. Hall M. Broadbent M.D. Martin

<u>Report N°</u>	<u>Title</u>	<u>Author(s)</u>
R73/I4	Video Recording	I. Turner M.D. Martin
R73/I7	Laboratory Evaluation of Printed Subject Indexes : Part II Results	T.M. Aitchison A.M. Hall

5.1.11. INTRODUCTION OF JICST TO ICSU AB MEMBERS
(JAPAN INFORMATION CENTER OF SCIENCE AND TECHNOLOGY)

by Y. YAMAMOTO
Director, JICST

A. General Status of JICST

1. Legal
2. Functions
3. Financial

B. Some Special Features of JICST

1. Historical Characteristic
2. Broad Scope of Activities
3. Comparisons of JICST with National Information Centers of other Countries
4. Computerized Information Processing System in Japanese Characters

C. JICST's Publications

1. Catalogue of Publications
2. Current Bibliography of Science and Technology

D. Computer-base Services

1. Lease of Magnetic Data Files
2. IR Service

E. Computer Technology

1. Computer Processing of CBST
2. Computer Equipment

A. General Status of JICST

1. Legal Status of JICST

- 1) The Japan Information Center of Science and Technology(JICST) was set up in August 1957 as a special institution authorized under the JICST Act.

The purpose of this Act is to make JICST function as the central organization of science information activities for the advancement of science and technology in Japan.

- 2) The fundamental character of JICST as a legal body is defined under the Act as follows :

- a) JICST is under the general supervision of the Science and Technology Agency, Prime Minister's Office. Its capital and annual budget shall be approved by the Agency.
- b) The appointment of President and other Board Directors respectively shall be made or approved by the Prime Minister.
- c) The capital shall be invested by both the Government and private bodies.
- d) The Government can subsidize JICST in compliance with the national budget appropriation.

2. Functions of JICST

The main areas of JICST functions are outlined as follows :

(further references are made of 2), 3) and 4) in later chapters)

- 1) To acquire scientific and technical printed materials in the fields of natural science and technology on a worldwide scale. JICST's working collection is limited to periodicals and current publications. It is primarily concerned with the fields of physics, chemistry, earth science, metallurgy, engineering, information and management, but materials in other area of science which are interdisciplinary related with the above fields are also covered.

The acquisition of essential materials in 1972 is as follows :

Foreign journals (including noted conference proceedings)	5,200 titles
Domestic journals (ditto)	2,400 titles
Noted technical reports	38,000 pieces
Domestic patent specifications (including "open for public inspection")	100,000 pieces
Foreign chemical patent specifications	36,000 pieces

- 2) To process the available materials for transformed media (such as abstracts, classifications and keywords) and to disseminate the various kinds of secondary publications (including machine readable products).
- 3) To provide information retrieval services using JICST's own data files as well as MEDLARS and Chemical Abstract Condensate files.
- 4) To offer upon request services such as photoduplication, translation and search for literature and patent.
The volume of photoduplication and translation in 1972 totaled approximately 400,000 and 6,300 articles, respectively.
- 5) To provide several short-term training courses on information handling and management, and host an annual national assembly on the research of documentation and information processing.

3. Financial Status of JICST

While the legal principle of finance is as aforementioned, the actual status is generally as follows :

- 1) The present paid-in capital amounts to approximately US \$ 15.5 millions, with government investing really total of it but about 1 per cent shared by industrial cooperations. In 1973 the government fund is expected to be US \$ 2,3 million. The investments will meet the costs of fixed assets, purchase of source information materials and information processing operations (excluding personnel costs for permanent employees).
- 2) Government subsidy covers the deficit in the operating costs, i.e. the difference between operating expenses and self income.
- 3) The following is the gross financial balance planned for fiscal 1973 (unit : US \$ 1 million) :

<u>Revenue</u>		<u>Expenditure</u>	
Government investment	2.30	Fixed assets, Purchase of source materials and information processing cost	2.30
Government subsidy	2.65	Direct cost for publication and sales	2.00
Sales and miscellaneous income	4.05	Personnel and overhead expenses, computer cost and miscellaneous.	4.70
Total	9.00	Total	9.00

B. Some Special Features of JICST

1. Historical Characteristic

The foregoing paragraph A. 1. gives the legal description of the establishment of JICST, that was about 16 years ago. However, looking back more precisely the social situation at the time of its foundation, it was considered most urgent for JICST to contribute to Japanese industry to elevate their technology up to the level of the U.S. and European countries instead of helping the advancement of pure science.

It has been pretty long since then, but JICST is still more closely associated with industry than academic society, and medical and agricultural fields are mostly out of its coverage as yet.

2. Broad Scope of Activities

Despite the above mentioned characteristic limitations, JICST is the most comprehensive science information organ in Japan in the following respects :

- 1) Its coverage of the fields of science and technology is on a broad scale, ranging from applied mathematics, physical and chemical science, earth science, to the whole area of engineering. Patent information services are done in limited varieties.
- 2) As mentioned in foregoing paragraph A. 2, JICST activities are very versatile. Customers especially appreciate the combination services, linking the dissemination of the abstract journals with photoduplication and translation services of the quoted original texts. JICST's new computer-base service--lease of magnetic data file and retrieval service using a number of data file--are also expanding the business scope of JICST.

3) JICST is preparing for so-called clearing house information service of science and technology. Recently published "Manual of Public Research Institutes" is its first task which shows the research organization and current research activity of universities, national and local government laboratories and non-profit research institutes, with an unique scientific subject index.

3. Comparisons of JICST with National Information Center of Other Countries.

JICST is not a pure government organ but, in effect, the national scientific information center of Japan. As large-scale national information centers of science and technology, there are noted NTIS (National Technical Information Science) in the U.S.A., VINITI (Institut Naučnoj Informacii Akademii Nauk SSSR) in the U.S.S.R., and Documentation Center of CNRS (Centre de Documentation, Centre de la Recherche Scientifique) in France.

While it is not simple to specify exactly the comparative nature of JICST with these foreign organs, it can perhaps be roughly described as follows :

- 1) More as compared with VINITI or CNRS, JICST may be characterized as being oriented to industry rather than academy, and is operated rather on a business basis. These inclinations can be observed from following facts :
 - a) JICST does not cover psychology, biology and social sciences nor does it place much stress on pure mathematics and astronomy.
 - b) JICST derives a substantial income from sales and services, covering nearly half of its total expenditures. Industrial firms account for nearly 80 per cent of this income, while the balance of 20 per cent is shared by scientific institutes, such as universities, national and local government research laboratories, and non-profit research institutes.

- 2) NTIS is understood as being technology oriented and operated on a business basis even more than JICST. However, an outstanding distinction between NTIS and JICST is the fact that the former, as far as technical information is concerned, deals only with information obtained from research and development sponsored by the Federal Government. JICST has not hitherto been specifically concerned with Government R and D, except the newly started clearing house services.
4. Computerized Information Processing System in Japanese Characters
- The most unique feature of JICST is its computerized editing and photo-composing system (making original film prints for offset printing) in which a large number of Japanese characters are handled effectively and at reasonable cost.
- Japanese sentences are composed of three categories of characters, i.e. kata kana, hira kana and kanji. The first two categories consist of 48 characters each resembling syllabic symbols and can be handled easily as Roman characters.
- Kanji characters, on the other hand, being ideographic symbols, are very difficult to handle in a computer system because of the complexity of its structures and the multiplicity of its number. There are known to be several tens of thousands of different kanji characters. But for practical purposes, JICST employs only a limited number, approximately 2,500, to handle scientific documents, yet it requires complicated technique. (further reference is made in later chapters).

C. JICST's Publications

1) Catalogue of publications

Following is a list of the major publications of JICST for glancing :

Current Bibliography on Science and Technology (details are mentioned in next paragraph)

Abstract Journal on Environmental Pollution (bi-monthly)

Technical Digests for Smaller Industries (bi-monthly)

Technical Digests for Food Industries (bi-monthly)

Selective Abstracts on Metal Surface Processing Technology (semi-annually)

World Technical Highlights (monthly)

Foreign Chemical Patent News (weekly)

Manual of Public Research Institutes in Japan (annually)

2) Current Bibliography on Science and Technology (CBST)

a) General feature of CBST

Among the above publications, CBST is the most essential product of JICST worthy of being specifically referred to here.

This is an abstract journal in which articles are quoted with bibliographic notes written both in their original language and translated Japanese as well as indicative type abstracts written in Japanese.

The journal consists of the following nine categorical editions which are coordinately edited but independently published.

Physics

Foreign Chemistry and Chemical Engineering

Japan Chemical Abstracts (Domestic Chemistry and Chemical Engineering)

Electrical Engineering

Mechanical Engineering

Civil Engineering and Architecture

Earth Science, Mining and Metallurgy

Isotope and Radiation Chemistry

Information and Documentation

- At present only this edition differs from others in processing and editing method, because of the fact that it was originally published by other institution and transferred to JICST some years ago.

Complete amalgamation to CBST system is scheduled next year.

The issue frequency of these editions are not same ranging from once to three times a month.

The number of cited articles in 1972 editions of CBST amounts to about 360,000 in net figure and 420,000 in gross total. The difference is due to cross-reference of citations among categories. CBST series provide two sorts of index. One is a keyword index attached to every current issue and another is an annual volume index published separately for each of the above editions. The latter is arranged with author index as well as very detailed subject classification index, and is produced within a couple of months after the publication of the last current issues on account of the computerized editing and printing method.

b) Abstracting and indexing method of CBST

JICST employs about 100 information officers with scientific backgrounds and linguistic ability who engage in preparation of abstracts of abstracts and indexing work of CBST.

The selection of documents to be cited is made by those JICST officers and the source copies are sent to about 4,000 cooperative abstractors who work at universities, national research laboratories and industrial firms all over the country.

JICST officers examine the manuscripts of abstract made by those outside professionals and make subject analysis of them assigning classification codes and keywords. JICST's classification system is principally based on U.D.C. with partial modifications which have resulted from its own empirical study.

The keywording practice is still on the way of development. At present 5 descriptors are assigned to an article on the average under the control of the interim thesaurus, which regulates about 40,000 registered terms. JICST has been striving for the compilation of a fully consolidated thesaurus, which will become effective in very near future.

D. Computer-base Services

1) Lease of magnetic data tapes

JICST began test service of leasing data tapes from April 1972, expecting to make it fully practical in a couple of years. The data tapes are prepared in nine categories which just correspond to those of CBST editions, and are delivered to subscribers about one month ahead of the corresponding printed materials.

Two modes of tapes are provided at present :

i) Japanese mode (or called kanji mode)

The recorded content of data file is just same as that of CBST, consisting of bibliographic segment (in original and translated Japanese languages) and abstract segment (in Japanese).

ii) Roman-kana mode (or called kana mode)

Only bibliographic notes are recorded.

All foreign articles are referred to in Roman alphabets while Japanese articles in kana characters.

At present time most of leased tapes are of kana mode and very few of kanji mode. This is supposed to be not the real preference of information users, but merely the expensiveness of kanji output device of electronic computer. So we are very sure of the future popularization of kanji tapes as the cost of kanji device gets down.

2) IR service

At the present time JICST provides three sorts of IR service using JICST's own science and technology file, MEDLARS file and CA Condensate file.

The latter two files are made available through the contracts with the U.S. National Library of Medicine and the Chemical Abstracts Service respectively.

The history of these services has not been very long ranging from period of one year to several months, and principally SDI services are offered with the exception of short term retrospective search using MEDLARS file.

As to retrieval computer operation, presently magnetic-tape-base batch processing is only available for practical use.

All the computer programs necessary for search operation and data format transformation have been prepared by JICST itself. A simple conversation type search program is also ready for trial use in making search profile formation.

In order to meet rapidly increasing IR service demand the replacement of computer devices is scheduled next year. This new system will also enable us to elevate the search technique so as to make available on-line search operation either to JICST staff as well as customers who are located in Tokyo Metropolitan area in near future.

Long distance on-line service, however, seems to be a matter of fairly long future because the prospect of its utilization is not very bright in Japan primarily from economic view point.

F. Computer Processing and Equipment

1) Computer processing of CBST

Drafts of abstract and indexed data are written in specifically designed manuscript sheets of CBST. They are punched into paper tape with kanji-kana teletypewriters and flexowriters, and read onto magnetic tape through computer devices.

The thus stored records on magnetic tape are printed out by a special line printer (called kanji printer) on rolled paper which is used for proofreading and correction. The corrected data are input again and after a number of this way of circulations the finally fixed units of data are stored in the master magnetic tapes.

Then the computer makes editing process with those master tapes and prints out plate film for off-set printing of CBST publications.

This kanji printer is a sort of flying spot cathod-ray tube coupled with an exquisite character generator which can produce about 3,000 bits of kanji, kana, Roman, Russian characters as well as numerics and scientific symbols. Its works at pretty high speed and parallel printing operation of film and paper is also possible.

2) Computer equipment

In JICST there are two units of computer operated at the present time . The major one is FACOM 230-50 system with main memory capacity of 65 kW and another is FACOM 230-25 with a smaller memory of 48 kB. The present systems were originally designed for the purpose of editing CBST and miscellaneous business calculations, so that their capability has been becoming insufficient for the development of IR business.

For this reason replacement of the present equipment is scheduled next year to a new unit with much higher capacity to perform the improvement of the conventional works as well as the advancement of IR operation, mentioned in the foregoing chapter D 2).

5.1.13. THE U.S. NATIONAL LIBRARY OF MEDICINE

by Martin M. CUMMINGS
Director, US National Library of Medicine

The National Library of Medicine (NLM) has continued its efforts for the advancement of biomedical research, education, and practice by developing services and products which provide a timely and equitable access to biomedical information. In the execution of these programs, the NLM has collaborated with the medical library and the medical and health communities.

During the past year about 30 % of the NLM budget, or approximately \$7 million, was provided through grants to health related organizations and medical libraries for training, research, resources, publications, regional activities, and expanded services. Direct services provided by NLM to the professional health community included about 150,000 computer services, 25,000 reference services, 60,000 motion picture film loans, 130,000 interlibrary loans and photocopies, publications such as INDEX MEDICUS, ABRIDGED INDEX MEDICUS, CURRENT CATALOG, and 24 recurring bibliographies in specialized subject areas.

A national biomedical communications network has become a reality through the operation of our MEDLINE (MEDLARS On-Line) system. MEDLINE, which is an extension of MEDLARS, contains a data base of over 400,000 citations drawn from the 1970-1973 issues of 1200 medical journals. Currently there are 155 U.S. institutions with over 200 terminals connected by a telephone network to a computer at the NLM and the State University of New York; and 50 users may simultaneously query the computer. Approximately 12,000 searches are done monthly which enable a librarian or health professional to obtain directly and immediately current information on medical research, education and practice.

The Library has also successfully developed and operated another information retrieval system, TOXLINE (Toxicology Information On-line). Its data base is drawn from the Toxicity Bibliography (56,000 citations), the Health Aspects of Pesticide Abstract Bulletin (9,000 abstracts with Chemical Abstracts registry numbers, 1966--1971), and Chemical Biological Activities (CBAC) (110,000 abstracts with CAS registry numbers, 1965--1972). This system was developed to respond to the needs of environmental and health scientists for toxicology information and data.

The Library continues to explore the use of technology for improving communications. Its Lister Hill National Center for Biomedical Communication has a successful satellite project in Alaska which provides voice consultation between community health aides and physicians at medical centers, as well as continuing education of health aides, nurses and physicians. Weather and terrain often will not permit other modes of communication. The satellite linkage is reliable and has been credited with saving the lives of three critically ill persons. The Lister Hill Center also sponsors in our New England area a full two-way interactive television project which brings into contact the medical school classroom and the small community hospital. Experimental projects are being initiated for the use of cable television in areas of New York, New York. These are pilot efforts to evaluate the usefulness of incorporating cable TV into health care and educational programs. Computer-aided medical instruction is another area which is being evaluated using the communications network of MEDLINE. Computer-assisted instructional materials developed by several universities will be available through our network for use and assessment by other institutions.

The National Medical Audiovisual Center of NLM has, as its primary responsibilities, the acquisition and distribution of audiovisual materials and the development and application of non-print media for biomedical information transfer. Cooperation with specialty groups has resulted in the development of multi-media packages which are being tested within academic settings to determine their impact on the nature and quality of medical school curricula.

The Library's eight international quid-pro-quo MEDLARS Agreements were reviewed this past year by an International Advisory Policy Group drawn from the participating countries and NLM. The Group reaffirmed the value of both the bilateral mechanism and the quid-pro-quo character of the agreement. This enables a participating country to have access to a highly specialized system by providing intellectual input to the MEDLARS data base.

5.1.13. VINITI's INTEGRATED INFORMATION SYSTEM

by A.I. CHERNYI •

Deputy Director of the All-Union
Institute for Scientific and Technical
Information.

One of the major prospects for meeting the present critical situation in the domain of scientific communication, which is a natural corollary of the advancement of scientific and technological revolution is the development and practical implementation of special automated information systems known as Integrated Information Systems. An integrated information system is the totality of methods and means which, once an information item has undergone analytico-synthetic handling and has been fed into the system, permits a repeated and multi-aspect processing of such an item and its recurrent utilization to meet varied information needs.

An integrated information system is a complex hole made up of several simple systems, each designed for some basic function and capable of independent operation, but taken in an organic unity with other simple systems, it turns to be part and parcel of the integral whole which can fulfil certain new functions impracticable for any of its constituent simple systems. That is to say, the total set of functions performed by a correctly designed integrated information system must always be greater than the arithmetic total of the functions that its constituent simple systems can perform. An example of such new function of an integrated information system is its capability for meeting practically all types of information needs, whereas information systems are usually oriented at a particular type of need.

No representative of VINITI attended the Full Board Meeting. This report was received after the meeting ended.

It should be emphasized that an integrated information system is one system whose component parts and subsystems must be intrinsically tied in and merged together. These subsystems and component parts make up an integral whole, indivisible without a loss of some specific property.

A complete documentary integrated information system must comprise at least the following functional subsystems :

- selective dissemination of information;
- current-awareness bulletin,
- abstract journals with indexes, and
- retrospective search of documents and information.

We believe that the proper approach to building an integrated information system is not "inductive", i.e. by identifying the common elements of the simple systems being integrated which make it possible to join or tie up these systems into a single complex, but rather "deductive", i.e. by decomposing the information handled by each of the simple systems into structural elements, identifying non-repeated structural elements, and devising a new bigger system capable of performing all the functions of the initial simple systems by making use of only the selected minimum of structural elements. Thus, we obtain not a "mixture" of simple systems, but so to speak, their "solution", which is characterized by less entropy than that of the arithmetic total of those systems.

Integrated information systems have been called into existence by social need stemmed from certain peculiar features of the organization and development of modern science and technology.

An important trait of the present-day science and technology lies in the fact that their organization has at least three-dimension structure :

- science and technology retain the traditional divisions into disciplines ;

- science and technology are organizationally arranged by the economy sectors and industries, which are not identical to the scientific disciplines ;

and

- science and technology become increasingly oriented at solving multi-disciplinary problems, necessitating the use of the methods and results of a great number of scientific and technical disciplines.

This means that to cope with the information needs of contemporary scientists and practitioners one must be able to produce any disciplinary pattern of the information aids and services i.e. to group or "repackage" the sources of scientific information by any given combination of characteristics. This task is impracticable with the conventional procedures of preparing information publications.

Another major feature of the present-day science and technology consists in their fast growth as to the number of workers involved. The present decade alone witnessed a 2.7 fold increase of the number of scientists in the USSR, which amounted to 985,200 late in 1971. Besides, by the end of 1971, the number of trained engineers employed in the national economy was 2,650,000, while the overall number of specialists with higher and secondary special education totalled some 10,600,000. In this context any plans for providing that huge mass of scientists and practitioners by systems of selective dissemination of information should be regarded as a vain dream.

For a long time ahead, information publications of various types and purposes are to remain the principal means of pinpointed information supply to scientists and specialists. Nevertheless, information publications should meet ever more rigid requirements as to their subject composition, coverage and preparation time.

To be sure, every scientist or specialist wants information tailored to his particular needs determined by his personal characteristics (qualification, cast of mind, etc.) and the specifics of the problem concerned. This suggests that every group of scientists or specialists engaged in solving a certain scientific or technical problem should be provided with special information publications. The conventional preparation procedures of any new information publication presuppose a new processing (indexing and/or abstracting) of avalanche of published and unpublished documents pertaining to the recent developments in science and technology. Moreover, each time many laborious operations have to be repeated all over again in retyping, composition, proof-reading etc. In other words, each new "repackaging" of scientific and technical information geared to new requests calls for a tremendous expenditure of skilled labour, time, and material resources. Integrated information systems seem to be the sole remedy for that wastage.

Thus, mankind's need for integrated information systems is sharpening, but to create or implement anything - the integrated information systems in the case at hand - the community must possess adequate material capabilities. As a matter of fact, the community usually never feels a real practical need for what it is technically at least potentially, incapable of creation or implementation.

The necessary conditions for devising an integrated information system are as follows :

- the information to be handled should afford this, and
- the adequate technical facilities should exist.

An important trait of information lies in the fact that it is not spent in the course of its utilization. In this sense information resembles labour tools which are repeatedly used in manufacturing or processing various products. But information is not identical with its material carrier. Therefore, unlike the labour tool, it can be

- utilized unlimited number of times
- reproduced and simultaneously utilized in solving numerous problems.

The only limitation imposed on information is its obsolescence rate.

The analysis of all kinds of information services has shown that they are based on - taken in different combinations - largely the same information items - author names, document titles, imprints, classification numbers, keywords or descriptors, and the like. Hence, by entering into a big information system all the non-repeated information items the system needs to perform its particular functions and keeping these items within the system for a pre-specified time span, one enables such a system to perform efficiently the functions of several simple information systems, per unit costs of each function in that case are lower than with a simple (specialized) system. This is ensured by ruling out the repeated costly input of the same information item into different specialized systems and storing those items in these systems.

The technical facilities necessary for developing an integrated information system must enable :

- the storage of great amount of information in a form permitting its further machine handling ;
- automated selection, from the file stored, of all the information items possessing a given characteristic or combination of characteristics ;
- the necessary arrangement of the retrieved (selected) information ; and
- rapid output of the relevant information in a format convenient to the user.

All that became possible after the high-speed large-memory digital computer came on the scene.

Practical work on development of VINITI's Integrated Information System was started in 1969. This system has no analogue in the world practice and features the following :

a) VINITI's Integrated Information System is devised as the central system of the country for centralized analytico-synthetic processing of world's scientific and technical literature with exhaustive coverage ;

b) VINITI's Integrated Information System is a multi-disciplinary system encompassing all exact, natural and technical sciences and fields ;

c) the development of VINITI's Integrated Information System is to be conducted in parallel with the further unfolding and upgrading of all the existing activities of VINITI in the present organizational forms.

These specific features give rise to peculiar difficulties and problems as yet untackled in the world experience gained in designing and practical implementation of such information systems.

The following criteria should be met in designing VINITI's Integrated Information System :

- the System's compatibility with other similar systems both in the USSR and abroad ;

- capacity for processing 2.5 to 3.0 million publications per annum, i.e. approximately the tenfold of the biggest known integrated information systems in the world ;

- surmounting of the difficulties springing from publications' scattering as well as differentiation and integration of science ;

and

- preservation of the existing organizational forms of work paralleled by a gradual re-training of personnel in the course of the System implementation.

The integrated information system being developed at VINITI was named ASSISTENT (Avtomatizirovannaja Spravochno-informatsionnaja SISTEma po Nauke i Tekhnike - Automated Reference Information System for Science and Technology). The name implies that this system is meant to be an effective assistant to scientists and practitioners in tackling the research, production, organisational and managerial problems that confront them.

The development of ASSISTENT as a component part of the country's State Scientific and Technical Information System pursues the following objectives :

(a) To materially upgrade the effectiveness of scientific and technical information service to Soviet scientists and practitioners thereby substantially increasing the efficiency of their creative work and accelerating industrial application of scientific innovations.

(b) To foster the development of the State Automated Scientific and Technical Information System in this country.

(c) To have an automated reference information system that would be compatible and on a par with similar automated information systems in Western Europe, United States and Japan. This will create a more favourable climate for gradually integrating the national scientific and technical information systems of the CMEA (Council for Mutual Economic Assistance) member countries into an International Scientific and Technical Information System, and for the evolution of the World Scientific Information System (UNISIST).

(d) To create the scientific, methodological and organisational prerequisites for the further improvement of the forms and methods of the information support to Soviet scientists and practitioners through the extension and elaboration of the overall automation of analytico-synthetic processing of scientific information.

The ASSISTENT is designed for reference information service to scientists and practitioners on the major areas of science and technology, branches of economy, and interdisciplinary problems. It is supposed to cover only published (or para-published) scientific documents in all languages from all over the world.

The ASSISTENT will provide for the following kinds of reference information service :

- selective dissemination of information ;
- information publications of different types and purposes ;
- demand retrospective searches ;
- fact and data retrieval in different fields of science and technology ;
- storage and supply on demand (through standing or one-time orders) of full copies of published scientific documents accessioned by the system.

The ASSISTENT will discharge its functions largely through the network of the State Scientific and Technical Information centers which will order from the ASSISTENT custommade data bases or reference information collections including machine-readable files complete with the necessary software for reference and data retrieval. To make it possible an effective communication system must be developed to link VINITI with the country's other scientific and technical information bodies (discipline oriented, regional and specialised) and provisions must be made for the compatibility between the ASSISTENT and the computer-based information systems operating at these bodies.

The development of the ASSISTENT takes account of the scheduled numerical growth of the scientists and practitioners working in the national economy, as well as the growth of the world's output of published scientific documents.

The following list of priorities in the requirements the ASSISTENT is supposed to meet has been formulated :

- provision for the viability of the overall system -1
- shortest possible terms of preparation, production and circulation of information publications, as well as discharge of information services -2
- high quality of analytico-synthetic processing and presentation of published scientific documents entered into the system and high quality of information retrieval, document copying, etc. -3
- comprehensive (total) coverage of the world's published scientific documents by information publications and searches -4
- nominal prices for information publications and nominal charges for information services -5
- minimal costs of analytico-synthetic processing of scientific documents -6
- minimal costs of machine processing of information -7
- preservation of the originals of scientific documents entered into the system -8

Selective dissemination of information (SDI) should be run on at least a fortnightly basis and should be designed primarily for individual information service of scientists and practitioners. The SDI service should be based on the scientific documents covered by both of these kinds of information publication :

- current awareness bulletins, and
- Abstract Journal

The time lag from receipt of a document by VINITI and its announcement by the SDI service must not exceed 15 days.

Provision is made for an active user feedback, i.e. communicating to the SDI system the degree of relevance, novelty and utility to the user of those documents whose references are listed in each notification received by him, and a systematic stock-taking of this feedback data with a view to optimising the system.

The VINITI information publication system consists of the following publication types :

- current awareness information ;
- Abstract Journal complete with indexes ;
- special-purpose information retrieval systems for highly specialised subject fields or problem areas ;
- analytico-synthetic surveys on major areas, subjects and problems.

Current awareness information is designed to take care of the following tasks :

(a) regular, prompt and as complete as possible announcement to scientists and practitioners of all the scientific documents published throughout the world which may be of relevance to the theoretical and practical problems facing these scientists and practitioners.

(b) the fullest possible registration of all the scientific documents published in the world on a given area, subject or problem with the aim of making possible their retrieval and use.

Current awareness bulletins are designed for use mainly by scientists and practitioners themselves, rather than by information officers acting as intermediaries.

Current awareness bulletins are bi-weekly indexing publications covering all the documents that have been accessioned by VINITI during each fortnightly period.

Document references are listed in a classified order. A bibliographic reference may recur any number of times in different current awareness bulletins or in different sections of the same bulletin.

Current awareness bulletins should use a variety of subject heading systems to suit the needs of rather numerous groups of Soviet scientists and practitioners and should follow three basic approaches :

- the subject approach, i.e. in keeping with the List of Subject Headings of VINITI Abstract Journal ;
- the branch approach, i.e. according to the branches of national economy ;
- the interbranch (interdisciplinary) approach.

Current awareness bulletins must incorporate a facility for dynamically adjusting the depth of indexing of the material in relation to its quantity. Any list of subject headings used in a current awareness bulletin must allow for sufficient depth of indexing so as to have not more than 20-25 references entered under the most specific subdivision (subclass).

Every issue of any current awareness bulletin must have an author and patent indexes, a Russian keyword-in-title index, and an index of serials covered by the given issue.

Practical provisions must be made for supplying current awareness bulletins with translations of subjects headings and/or tables of contents into the languages of the CMEA member countries as well as English and French.

Current awareness bulletins will appear within 25 calendar days from the beginning of every fortnightly period when new scientific documents are received by VINITI.

The ASSISTENT must guarantee the prompt provision to any scientist or practitioner, at his request and in a suitable form of a copy of any scientific document covered by a current awareness bulletin. The charges to scientists and practitioners for document copying must be nominal (not exceeding the cost price of copying) and copies must be prepared within 10 calendar days.

Provisions are also made for producing tape versions of current awareness bulletins.

The Abstract Journal is designed to serve the following main functions :

(a) To keep this country's scientists and practitioners informed of all the advances in the world science and engineering (as reported in published scientific documents) with a view to their timely and widest possible application in this country.

(b) To help this country's scientists and practitioners overcoming both interlinguistic and intralinguistic (terminological) barriers.

(c) To inform scientists and practitioners of advances in allied areas of science and technology with the aim of applying these advances in other areas (integration of science and technology).

(d) To serve for scientists and practitioners as an individual tool for retrospective searching of documents and data.

The Abstract Journal will cover all of the most valuable scientific documents in any language which are published throughout the world and come within the competence of VINITI. The Abstract Journal appears as cumulated volumes and issues which may or may not form part of cumulated volumes.

The range of VINITI's Abstract Journal issues and cumulated volumes must be determined by :

- List of Subject Headings Used in USSR Abstract Publications (Moscow, VINITI, 1969, vol. 1, 533p ; vol.2, 60 p. in Russian) which is subject to updating and /or revision according to a standard procedure every three years ;
- the summary quantity of scientific documents published throughout the world in each given field of science and technology ;
- the needs of science, industry and management.

The ASSISTENT should provide for obligatory publication of the Abstract Journal in its conventional printed form only for the major fields of science and technology. Specialized or interdisciplinary problem-oriented Abstract Journal issues will in most cases be published - if suitably ordered - on magnetic tape and/or microfilm rather than in book form. A decision to launch a new ASSISTENT based Abstract Journal issue for some field of science or technology, industry or an interdisciplinary problem area shall be taken on a representation from VINITI, by the Presidium of the USSR Academy of Sciences and/or the USSR Council of Ministers State Committee for Science and Technology on the strength of the following :

- an order for such an issue has been suitably submitted ;
- there are sufficiently many scientific documents published in this subject field or problem areas ;
- Soviet scientists and practitioners are clearly in need of an issue of this kind. -

Published documents are selected for inclusion in the Abstract Journal according to criteria which are common to all the Abstract Journal issues and cumulated volumes. This is the responsibility of trained subject specialists who are guided in their work by :

- an approved List of Subject Headings,
- the dynamic needs of science, industry and management, and
- their own scientific and industrial experience.

The scientific documents included in the Abstract Journal are abstracted, annotated and indexed, as a rule, by highly skilled external subject-specialists closely allied with research, industry or academies who know the respective foreign languages.

The Abstract Journal will include only the abstracts and annotations of published scientific documents. The inclusion of bibliographic references without abstracts (annotations) or without a reference to previously published abstracts (annotations) will not be allowed.

Every number of an Abstract Journal issue or cumulated volume is to contain the following indexes :

- author index,
- alphabetical subject indexes (patent, geographical, formula etc.)

The nomenclature and structural patterns of specialized indexes should be determined by the particular knowledge field covered by the given Abstract Journal cumulated volume or issue.

The foregoing indexes shall also appear in semi-annual and/or annual cumulations, and formula indexes shall additionally appear as five-year cumulations.

Cumulative semi-annual and annual indexes shall appear within 50 calendar days from the publication of the last number of the Abstract Journal for the corresponding time period, and five-year formula indexes, within a year.

Alphabetical subject indexes to all Abstract Journal issues and cumulated volumes must have a common internal arrangement and must be prepared by a uniform methodology. The so-called quasi-permuted index must serve as the basic model for such indexes.

With a view to lowering the interlinguistic barriers which hinder an effective use of the Abstract Journal by foreign scientists and practitioners (primarily those in CMEA countries) and gradually developing the Abstract Journal into the main abstracting service in science and technology for all CMEA countries the ASSISTENT envisages a facility for automatic translation (using bilingual or multilingual descriptor lists) of the subject indexes to the Abstract Journal into the Hungarian, German, Polish, Czech and other languages of the CMEA countries and the English language, publication of a part of each printing run of the Abstract Journal with its subject indexes, contents pages and/or lists of subject headings translated into these languages.

Preparation and publication deadlines for Abstract Journal issues and cumulated volumes (reckoning from the date of Publication of original documents) shall not exceed :

- 75 calendar days for 100 per cent of the documents published in the USSR, and
- 90 calendar days for 50 per cent of all documents published abroad.

Abstract Journal issues and cumulated volumes will generally appear at fortnightly intervals. They are expected to be published in the following forms :

- (a) in conventional book form,
- (b) on 16 mm roll microfilm using a suitable photo-optical coding system (odometric, linear and/or other) designed for automatic searching of abstracts or annotations by means of appropriate reader-printers. Roll microfilm will be kept and transported in standard closed cases holding 30.5 meters of film.
- (c) on magnetic tape.

Consideration is also being given to the feasibility of selecting, classifying and publishing on 16 mm microfilm and on magnetic tape of abstracts and annotations appearing in all the

the Abstract Journal issues and cumulated volumes, ordered by any combination of these approaches :

- List of Subject Headings class numbers,
- UDC numbers,
- keyword or descriptor lists.

Special-purpose information retrieval systems must :

- be launched for relatively specialized subject fields or problem areas as demand arises ;
- provide for both reference and data retrieval using any arbitrarily selected combination of characteristics ;
- recognize the fact that the researcher or practitioner will in most cases himself interrogate the system.

The publication and republication of the system shall be a by-product of the SDI service and the Abstract Journal and current awareness bulletin production routines. Each special-purpose information retrieval system shall consist of three parts :

(a) a regularly updated (republished) retrieval tool which may take one of the following forms :

- a book
- a set of 80-column IBM cards used as optical coincidence cards,
- a roll microfilm,
- a magnetic tape.

(b) a regularly updated file of photomicrocopies of documents entered into the system.

(c) instructions and rules for use of the given IR system

The frequency of publication of any special-purpose system should be established in keeping with the specificities of the subject field or problem area concerned. Special-purpose IR systems shall be disseminated on a subscription basis.

Consideration is being given to the publication of special-purpose systems together with their retrieval apparatus and rules for use translated in CMEA languages and English.

Analytico-synthetic surveys on major subject fields and problem areas (Science and Technology Progress) will be published until 1980 using conventional techniques. Because of this, the preparation and production of analytico-synthetic surveys is not a function of ASSISTENT, though the system will be used in selecting documents for each such survey.

Retrospective retrieval of documents on single requests (i.e. in the "question-answering" mode) must be provided :

- (a) in the document file covered in current-awareness information (CAI), and
- (b) in the document file covered in abstract journal (AJ)

The design of the ASSISTENT system includes provision for retrospective document retrieval by any of the following types of characteristics and their various combinations :

- codes of subject headings list (Rubricator) used in VINITI's informational publications ;
- UDC numbers (for documents covered in AJ) ;
- keywords from document titles covered in CAI ;
- lists of keywords or descriptors (documents covered in AJ)
- International Patent Classification numbers (for patent and author's certificate specifications) ;
- geographical names.

These characteristics can be supplemented with formal characteristics of documents that are of interest to the user.

The information retrieval system (IRS) intended for retrospective searches of documents will be made up of two components :

- (a) Active IRS implemented on a high-speed computer, mechanized and/or automated microfilm document storages and other up-to-date information facilities performing daily searches on up to 100 requests ;

(b) Archival IRS (one or several) implemented in printed form, on roll microfilm, microfiches or some other medium and handling a maximum of 30 requests a day.

Obsolete documents will be extracted from the main (active) IRS and transferred to the auxiliary (archival) IRS taking account of the differing obsolescence rates of special information - and, hence, the documents conveying it - in the various fields of science and engineering.

Provision is planned for adjustment of the retrieval process by its intermediate results (user-system dialogue).

The IRS must retrieve storage items supposed to be relevant and present them in the following main alternative forms :

- (a) Listing of document members in CAI or AJ ;
- (b) Bibliographic descriptions of documents (with or without their numbers in CAI or AJ) ;
- (c) Abstracts and annotations (with bibliographic entry) for documents covered in AJ ;
- (d) Microcopies of documents (microfiches or roll microfilm) which can be accompanied with abstracts (annotations) provided these are available in the system - or with bibliographic data alone ;
- (e) Full-size copies of documents plus abstracts (annotations) - when available in the system - or bibliographic data alone.

Mechanized or automated document storage on microfilm in the active IRS is to secure meeting the following goals :

- rule out the loss of any document ever entered into the ASSISTENT system ;
- store all documents entered into the system for a term of at least 15 years beginning with 1975 ;
- produce a micro copy or a full-size copy of any document within 30 minutes upon finding of the document's storage address or bibliographic entry.

The IRS will deliver subject-based and other files of micro copies of documents entered into the ASSISTENT on the basis of permanent interest profiles of the users. The files will be on microfiches or roll film.

The feasibility is being studied of using the system for retrospective document retrieval on individual requests in national languages of the CMEA countries and also in English and French.

ASSISTENT will comprise factographic search subsystems in chemistry, metals, biology, geology, radio-electronics, geography, etc. All these facto-graphic retrieval subsystems will be appropriately linked with the subsystem of documentary information retrieval.

A special (functionally specialized) mechanized or automated subsystem is under development for on-request delivery of copies of all documents inputted to the ASSISTENT system and covered in VINITI's informational publications.

This subsystem will store all periodicals and serials, collections of papers, monographs and other sources signalized in AJ and CAI (except for manuscripts deposited outside VINITI). These sources will be stored as micro copies and - partly - as originals. The storage period must not be shorter than 15 or 20 years.

Copies will be ordered in this subsystem by any of the following features (or combinations of these) :

- complete or abridged bibliographic entry of a document ;
- abstract (annotation) number in AJ ;
- document's entry number in CAI ;
- registration number in the ASSISTENT system.

The copies will be full size or micro on microfiches or roll film, depending on user's option. The time terms of copy delivery (time from receipt of request to mailing of the copy) will be not more than 10 calendar days for 80 per cent of requests and 15 calendar days for 100 per cent.

Three information retrieval languages will be used in the ASSISTENT :

- the system of classification making up the Rubricator ;
- UDC ; and
- descriptor language.

The Rubricator is used for automatic arrangement of entries in secondary publications, as well as for selective dissemination of information and retrospective retrieval. The structure and contents of the Rubricator must permit to prepare CAI bulletins and AJ issues on any combination of characteristics provided this is economically justified, that is if there is a sufficiently large user group with a similar interest profile. This implies that the Rubricator must be systematically updated and refined taking account of the results of analysis of the operation of selective dissemination of information service and the on-request services. As has been mentioned earlier, the Rubricator is to be developed on the basis of the existing "Rubricator of Soviet Abstracting Publications", created at VINITI throughout the past 15 years and apparently providing adequate reflection of the information needs of a majority of Soviet users.

The descriptor language is intended for compiling alphabetic subject indexes to AJ and for SDI services and retrospective searches. The vocabulary of the language is a fixed list of descriptors and any keywords derived from text of document being indexed and functioning as identifiers of descriptors. Only links will be used in documents' search patterns. Search specifications are stated using Boolean operators AND, OR and NOT and "weights".

For raising the indexing and retrieval efficiency, a system of compatible thesauri in various fields of science and engineering, special subject and problem areas is planned.

Four specialized functions subsystems will be comprised in the ASSISTENT system :

- subsystem for analytico-synthetic document processing (ASP) ;
- subsystem for printing and mailing of informational publications (PM)
- reference information service subsystem (RIS) ; and
- document copy delivery subsystem (DCD).

This organization must provide maximum operation efficiency due to functional specialization of the major components. Each subsystem will have a clearly stated range of tasks, and enjoy organizational and financial independence. Only the ASP subsystem will be government-sponsored. The remaining subsystems will be self-sustained, and their revenues will partly or completely reimburse government expenditures on ASP subsystem.

(a) The basic functions of ASP subsystem :

- exhaustive gathering and registration of all published science documents in the world within VINITI's profile ;
- microcopying (on microfiches) all documents incoming to VINITI and manuscripts deposited there so as to ensure preservation of these documents and also to supply copies of microfiches to the RIS and DCD subsystems as necessary for their functions ;
- full-size copying of published documents for analytico-synthetic processing ;
- indexing, annotating and abstracting of documents, scientific and stylistic editing of annotations and abstracts for SDI, CAI, AJ (with indexes), analytico-synthetic surveys of the "Advances in Science and Technology" series (AST), and retrospective document and information searches.
- SDI (without feedback to the users) ;
- typesetting of informational publications (CAI bulletins, AJ indexes and AST) using electronic computer and photo composition equipment and supplying the photo galleys to PM subsystem for multiplication and dissemination on subscription basis ;

- recording the informational publications on magnetic tape, 16 mm roll film and microfiches to be transferred to the RIS subsystem for multiplication, modified "repackaging" and on-subscription dissemination ;

- recording documents search characteristics and information on magnetic tape to be passed over to the RIS subsystem for further service of SDI patrons, retrospective document and information retrieval, and issuance of specialized information retrieval files.

In designing the ASSISTENT system it has been decided that data on each science document should be inputted not all at once but in single items. First, bibliographic entries of documents with the subject heading codes will be entered. This information can be prepared in minimal time, but it permits to begin reference information services prior even to the appearance of CAI, to say nothing of AJ. Then, the documents' search patterns (lists of keywords and UDC numbers) will be entered into the system, for deep indexing takes much longer than preparing bibliographic entries and indexing the documents by the Rubricator. And finally, texts of annotations and abstracts will be entered, for these take the longest time to prepare.

(b) The principal function of the PM subsystem is printing (multiplication) of informational publications, issued by the ASSISTENT system. This will be done on photo galleys received from ASP subsystem. PB subsystem will not be responsible for the typesetting operation.

(c) The main functions of RIS subsystem :

- delivery of document copies on request of SDI patrons, keeping feedback relations with the patrons to ensure raising the efficiency of SDI.

The ASP subsystem will not be responsible for any kind of reference information services, excepting dissemination of SDI notifications. SDI patrons and other corporate and individual users will have no direct access to the ASP subsystem. This will be a prerogative of RIS, PM and DCD subsystems. In this way, the casual disturbance of rhythmic operation of the ASP subsystem will be ruled out (i.e. it will not have to prepare answers to numerous and practically uncontrollable requests submitted by the users), and no detriment will be caused to the time terms and quality of the main function of ASP subsystem - exhaustive analytico-synthetic processing of published scientific documents.

Outside scientists and experts are enrolled to perform analytico-synthetic processing of science documents ; as they work themselves in science and industry, they are competent for adequate selection and rendering of information that is really valuable.

- multiplication and dissemination of CAI bulletins on magnetic tape and multiplication of AJ (with indexes) on magnetic tape and on 16 mm film (on orders submitted by users) ;

- issuance of AJ and CAI bulletins on magnetic tape and 16 mm film with special subject headings classification (on user's orders) ;

- retrospective searches (by various combinations of characteristics) of published documents covered in CAI bulletins and AJ, delivery of bibliographic information about documents and/or copies requested, and retrieval and delivery of the related factographic information ;

- preparation and dissemination of specialized information retrieval files (on subscription basis).

RIS will perform no analytico-synthetic processing of documents. It will make use only of ready-made retrieval files received from ASP subsystem on magnetic tape. The main function of RIS is to provide reference information services to scientists and engineers.

To raise the service efficiency, RIS will carry on systematic analyses of user needs and their dynamics, adjusting its operation by the findings and drawing up the respective recommendations for the ASP subsystem.

(d) The main function of the DCD subsystem is to quickly deliver - on users' requests - full-size copies of documents signalized in AF and CAI bulletins. The Copies must be normally produced on the basis of documents' bibliographic data to be specified in requests. The DCD subsystem will not fulfil orders necessitating subject searching of documents or searching by formal characteristics.

DCD will receive the microfiches of all publications and documents entering the ASSISTENT system and will be responsible for eternal storage of these microfiches. No original documents will be kept in DCD.

The hardware currently used for ASSISTENT system development is four computers - two Minsk.22 systems and two Minsk.32 systems. These facilities are sufficient for production of not more than 35 per cent of the total volume of current VINITI's informational publications.

To raise the efficiency of computer facilities these have been integrated into a complex system, thus greatly expanding their parameters. This effort of integration has been completed. In 1971, Minsk.22 computers were furnished with magnetic tape store SC-106A affording read-out and recording of data on magnetic tapes received from abroad.

A POTTER.3502 alphanumeric printer with a set of 192 characters has been connected to the computer complex, as well as communication switchboard M-1560. The latter makes it possible to connect teleprinter keyboards to the Minsk.32 computers (up to 32) and to record information on magnetic tape without any

intermediate paper medium (punched tpe). These developments enable to prepare the necessary computer software, accumulate valuable experience, and appropriately train the personnel . Owing to all this, VINITI will soon put into operation a large third-generation computer that will serve as the main hardware for the complete ASSISTENT system.

The phototypesetting DIGISET 50-T1 unit has been operational at VINITI since mid-February 1974. Its normal operation speed is from 300 to 600 characters/sec (depending on the size of characters). To-date more than 800 different symbols are stored in the unit's memory, including 140 Cyrillic characters and 86 Roman characters (light and semi-bold founts).

At present, computer input is mostly on punched tapes made on OPTIMA-527 and 528 and DURA MACH 1041 units.

Programs of AJ and CAI issuance in the integrated mode, i.e. on the basis of one-time computer input of information have been debugged and put into practical operation. The results prove practical efficiency of these programs that ensure high photo composition standards. Till the end of this year, CAI bulletins in all fields of chemistry and chemical engineering (39 series, totalling 230,000 entries in 1972) will be switched over to photo composition. Since 1972, CAL bulletins in all sections of automatics and radio-electronics (11 series, totalling some 50,000 entries annually) and since 1973, the AJ "Computer Engineering" were also started.

In 1974, the ASSISTENT system will be run for preparation and publishing of :

- CAI bulletins in chemistry and chemical engineering (39 series), physics (8 series), automatics and radio-electronics (12 series), biology (13 series) and welding ;

- AJ "Automatics, Telemechanics and Computer Engineering"
- and various indexes.

The total volume of informational publications planned to be issued by the ASSISTENT in 1974, amounts to 10,000 author's sheets or 240 typescript pages, i.e. about a quarter of the total volume of all VINITI's informational publications.

The creation of the publishing complex of the ASSISTENT system, which will produce all VINITI's publications, is to be completed in 1975, after the commissioning of a new ES-1050 computer, one of the most powerful Soviet third generation models. Other subsystems of ASSISTENT, and specifically, the subsystems of documentary and factographic information retrieval are to be put into operation in 1976 and subsequent years.

The development of the ASSISTENT system is a scientific, technological, methodological and organizational task of enormous difficulty. However, when accomplished, it will not only greatly raise the standards of information services provided to Soviet scientists and engineers but create a favourable environment for benefiting by the international division of functions in abstracting and indexing of science documents, exchange of ready-made retrieval files (on machine-readable media) with automated information systems in other countries, and eventually for building the World System of Scientific and Technical Information.

S.1.14. ZENTRALBLATT FÜR MATHEMATIK

REPORT OF ACTIVITIES

By U. Güntzer
Editor in Chief
Zentralblatt für Mathematik

"Zentralblatt für Mathematik und ihre Grenzgebiete" is devoted to the recording, abstracting and indexing of all literature in the field of pure and applied mathematics (including e.g. theoretical mechanics, computer science, operations research, econometrics, control etc.). Since the last report (c.f. Proceedings of the Full Board Meeting, June 1972, Ustaoset, p.141) twenty-three volumes recording more than 35.000 items have been published. The mechanization of the subject indexes of Zentralblatt has been implemented successfully. (These subject indexes are based on the classification scheme developed by the American Mathematical Society). The first collective index covering a period of more than one year is to come out this fall. Afterwards collective indexes are planned in two year intervals, in addition to our regular ten volume cumulative indexes, which appear approximately half yearly. The system of pre-publication abstracts, described in the Proceedings of the Full Board Meeting 1970, pp. 177-178 has been expanded further.

5.2. REPORTS FROM OBSERVERS

5.2.I. UNISIST PROGRESS REPORT

by A. WYSOCKI

Director, UNESCO Div. of Sc. and Techn.
Documentation and Information

During the last ICSU AB Full Board meeting in Ustaoset in Norway last year, Mr. Löhner reported on the proposed UNISIST programme for the current biennium 1973/74. This programme, as you certainly know, was approved by the General Conference of UNESCO in October 1972.

Today I would like to inform you briefly on the results already obtained in the first year of the implementation phase of the UNISIST programme, as well as to inform you of some current and future plans. I shall concentrate on only a few projects because it is impossible in a short time to give an exhaustive description of all the projects undertaken within the UNISIST programme. Therefore I shall restrict my information to the priority projects within the two UNISIST priority programme objectives namely : improvement of tools for systems inter-connection and assistance to developing countries especially as far as manpower requirements are concerned.

Within the first programme priority we have concentrated our efforts on the following projects :

UNISIST International Serials Data System

The ISDS is designed as a two-tier system consisting of :

- an International Centre (IC)
- National and Regional Centres

The ISDS-International Centre is established in Paris by agreement between UNESCO and the French Government. It is temporarily located at the Bibliothèque Nationale.

In November 1972 the Director General of UNESCO informed Member States of the creation of the International Centre and has invited them to co-operate in ISDS by establishing national or regional centres.

The response of Member States was most encouraging and to-date more than 30 countries have set up or are in the process of setting up national or regional centres, for example : Argentina, Australia, Austria, Canada, France, Federal Republic of Germany, Guatemala, India, Italy, New Zealand, Union of Soviet Socialist Republics, United Kingdom and the United States of America.

In order to help the national and regional centres to organize their work, UNESCO published the first edition of guidelines for ISDS in both French and English (Russian and Spanish are in the course of preparation). The guidelines cover the following main topics : a) ISDS organizational structure; b) operational policies and procedure; c) format and content of ISDS data base. The guidelines are intended both as a working manual for ISDS centres and as a source of information for users of the system.

UNISIST/ICSU AB Reference Manual for Machine-Readable Bibliographic Descriptions.

This joint ICSU AB/UNISIST effort in co-operation with interested non-governmental organizations such as : ISO, FID, IATUL, IFLA and INIS has now been completed after a practical field test in which about twenty-five abstracting and indexing services, libraries and similar organizations participated. The University of Sheffield made a survey evaluated the testing and prepared a report on the results including comments on the efficiency of the manual and recommendations for its modification. UNESCO has charged INSPEC to review the draft manual in the light of the report on the testing and prepare its final text. It will be published by UNESCO in English, French, Russian and Spanish (before October this year).

In this connection, steps have already been initiated by UNESCO to establish a suitable institutional mechanism in order to maintain and update the Reference Manual and to disseminate modifications and/or amendments. It is also considered to extend these functions to include dissemination of information on other existing or planned manuals of this kind.

It is believed that the Reference Manual should satisfy a wider range of users, including for instance, libraries, documentation services and national bibliographic centres and be hospitable to all major types of bibliographic materials.

It is therefore UNESCO's intention to bring together the interested organizations to attempt to consolidate their work in those areas in which it overlaps and in which there are not sound functional reasons for differences in approach with the aim of developing a single, coherent set of recommendations concerned with both the content and form of bibliographic data elements in both mechanized and manual system.

Broad System of Ordering

In accordance with the suggestions made in the UNISIST study report, UNESCO in close co-operation with the International Federation of Documentation has undertaken the establishment of a broad system of ordering or standard reference code as one of the aspects in the process of achieving compatibility between existing and future information systems. This broad system of ordering should serve as a switching mechanism to link different individual classifications and thesauri in the process of information transfer.

To fulfil this function adequately the BSO should be :

- A mechanism for shallow indexing, whose goal is to locate and transfer large blocks of information, rather than specific documents or data, between different discipline and mission-oriented systems, using, eventually, different natural languages.
- A universal scheme embracing all fields of knowledge.
- A flexible system, keeping pace with the rapid progress in science and technology. It should also be amenable to the application of modern management techniques for revision, updating and further distribution or revised editions to the users at minimum intervals.
- A scheme with a simple structure, so that it may be adopted by different information systems without much effort and heavy financial support.

- A scheme which could be easily used both by computerized and manual information systems.
- Besides serving as switching mechanism, BSO will also perform other important functions in the process of the implementation of UNISIST : to specify the field coverage of serials in a world register (UNISIST international Serials Data System);
- To serve as a broad filter in processing inquiries on information resources through the UNISIST referral network;
- To facilitate the determination of overlaps and duplications in the operational characteristics of information systems.

For this purpose a special working group was created within FID, composed of specialists from different countries under the chairmanship of Mr Toman. The working programme of this group for 1973 foresees the completion of the following tasks :

1. Preparation of a merged list of top-level subject-fields.
2. Exploration of future possible applications and uses of the SRC.
3. Exploration of possible structures, notations and layouts for the SRC.
4. Preparation of draft guidelines for determining what are the subject fields and how to place them in the SRC scheme.
5. Preparation of a merged inventory of English-named subject-fields, at 2nd and possibly 3rd level from more detailed provisional SRC, CCY and other subject-heading lists.
6. Comparison of the merged English list with the full DGD/ID project list in German and establish a combined inventory in at least two languages.
7. Screening and purging the resulting inventory (synonyms, equivalences of terms, etc.). Consultants with subject-field specialists (for completeness of coverage, etc.).
8. Contacting the FID/NFAIS project for the World Inventory of Abstracting and Indexing Services which can furnish an important data-base for practical testing of the SRC scheme.
9. The drafting of a first version of the SRC and submitting it for general comments.

It is expected that a general outline of SRC will be ready by the end of 1973 and a more detailed scheme is hoped for Autumn 1974.

UNESCO plans to convene a meeting of experts in 1974 to discuss the results obtained by FID/SRC Working Group.

World Machine-Readable Inventory of Abstracting and Indexing Services

UNISIST in close co-operation with the International Federation of Documentation and the National Federation of Abstracting and Indexing Services launched a long-term project for the establishment of a world network of interconnected referral services for the purpose of :

- a) allowing users to switch to the most appropriate services, according to their particular needs;
- b) analyzing the characteristics of existing information services with respect to coverage, subject categorization, cost policies, etc., so as to increase the knowledge of primary and secondary sources of information;
- c) detecting "anomalies" in the world-wide distribution of analytical work.

The purpose of the project is :

- To provide a world-wide inventory of information on abstracting and indexing services covering science and technology and social science and the humanities. The inventory, in machine-readable form, will be capable of cross indexing and sorting, and of being searched by various file access characteristics such as subject, country, language and others.
- To provide printed publications (guides and bibliographies) and other specialized services from the established data base.
- To provide a reference tool for librarians, information specialists and others in form of machine-based complete authoritative world-wide directory of secondary services, available in all commonly known media.

At the initial stage the data elements to be included in the Inventory have been defined. This resulted in an agreed list of 91 elements grouped into 11 main classes.

By the end of 1972 the final version of the Data Elements List was established.

To make a working test of the data elements definition, the worksheet and the input procedure, a sample computer printout of 100 services in agriculture, geoscience and physics was also produced in 1972.

It is expected that the final Master File of the machine-readable inventory will be completed by mid-1974. At that time a copy of the Master File and programme tapes developed during the project will be available both in Europe and the United States and special services will be offered from these two files. Appropriate measures will be taken to provide for regular updating of the data base.

UNISIST Manual for Information Systems Interconnection.

In order to establish a suitable means for packaging and dissemination information about standards and guidelines which are relevant to information systems interconnection, UNESCO began the preparation of a manual for this purpose.

The major components of this Manual will be the UNISIST/ICSU AB Reference Manual for Machine-Readable Bibliographic Descriptions and other guidelines which have been developed so far (guidelines for mono and multilingual thesauri, guidelines for writing technical reports, for presentation of data in scientific publications, for writing informative titles).

It will further contain the findings of the UNISIST Working Group on Bibliographic Data Interchange which will, based on the aforementioned Reference Manual, develop recommendations for interchange of bibliographic data in a compatible form among all types of users and producers and for all types of bibliographic material.

UNISIST International Centres.

In accordance with the decision made by the 17th General Conference of UNESCO that UNISIST will be the focal point for co-ordinating activities in the field of scientific and technological information but will depend to a great extent on the active participation of the Member States. For UNISIST purposes, UNESCO began negotiations with several Member States for the establishment of international centres or clearinghouses based on existing national facilities. As you know several centres or clearinghouses are already established, for example :

Unisist International Information Centre for Terminology (INFOTERM), Vienna, and two clearinghouses for collecting existing classification schemes, descriptive lists, etc., one in Case Western University, Ohio, and the second in Warsaw, Poland.

In accordance with the overall plan for the establishment of international information centres, the following centres or clearinghouses are planned to be created in the following years in the framework of the UNISIST programme :

1. International Information Centre on Reprography,
2. International Information Centre for Libraries and Documentation Centres Networking,
3. International Information Centre for Theory and Practice in Information Science,
4. International Information Centre for Standardization in the Field of Documentation and related fields,
5. International Information Centre on Practices of Selective Dissemination of Information,
6. International Information Centre for Information Systems Management,
7. International Referral Centre for Information Handling and Equipment,
8. Clearinghouse for Maintaining and Updating of Bibliographic Descriptions,
9. International Information Centre on the Application of Telecommunications and Teleprocessing for the Transfer of Scientific and Technical Information,

10. International Information Centre for Economic, Legal and Administrative Aspects of Access to Scientific and Technological Information.

The main objectives of the centres are :

- help to avoid duplication and insufficiencies in research and development on specific aspects of information transfer (e.g. acquisition, conceptual treatment of documents, information retrieval, reproduction, etc.) by collecting pertinent information and making it available to the users and producers of information;
- provide information on advanced experiments and techniques and, in this way, improve practical applications;
- foster the implementation of new techniques and experiences in developing countries.

In general terms, the aim of the Centres is to serve the progress in information transfer and by this to encourage the implementation of the UNISIST programme.

Co-operation with NGO's

Realizing the directives of the UNISIST Governmental Conference as well as the decision taken by the 17th General Conference of UNESCO that the UNISIST programme should be carried out in close co-operation with other organizations concerned. ICSU in close co-operation with UNESCO organized a second meeting of NGOs on the implementation of UNISIST, held in Paris 21-22 March 1973. During this meeting concrete plans and projects were discussed concerning the co-operation between the UNISIST programme and interested NGOs. This work is channelled in four directions :

1. Participation of representatives of NGOs in UNISIST working groups.
2. Contacts with NGOs or members of NGOs.
3. Direct consultation with representatives of NGOs.
4. Participation of UNESCO in working bodies of NGOs.

I would like to conclude my short report with some information on the UNISIST effort to assist developing countries to meet their requirements in the field of scientific information. This work could be divided into two parts : a) establishment of appropriate information infrastructure or national information systems; b) assistance in the training of information specialists and users.

As far as the creation of national or regional information systems is concerned UNISIST was charged by UNDP to develop several projects in Colombia, Indonesia, Ivory Coast, Korea and Southeast Asia. The financial resources of these projects are over half million US dollars.

The training or education effort comprises the preparation of :

I. UNISIST Handbook for Scientific and Technical Information and Documentation Services in developing countries.

The Handbook will be conceived for information workers in developing countries at various levels of responsibility who need, under one cover, a concise presentation of the current relevant knowledge which will provide them with the basic concepts, objectives and functions of information services of all kinds so that they can see the possibilities of systems interconnection and the sharing of workloads on the national and international levels, given the current state of the art of mechanization, technology and standardization. The Handbook will represent an easy-to-use, up-to-date and practical synthesis of the field's knowledge providing references and practical information, especially gathered and presented for the needs of developing countries.

The content of the Handbook is at present scattered for the most part in a series of publications, none of which have been written with the developing countries in mind. It is meant as a reference book for documentatlists, special librarians, information workers and specialists, managers of information and documentation systems and services, teachers and students in the field.

As a first step, UNESCO has signed a contract with Prof. Pauline A. Atherton, School of Library Science, Syracuse University, U.S.A., and has set up an International Editorial Board to assist the contractor in her work. Prof. Atherton will act as the chief editor for the Handbook.

II. Courses for Managers of Information Systems - The Library Administrators Development Programme, University of Maryland.

Within the objective, related to the assistance to Member States in the development of scientific and technical information manpower, a project is being undertaken for the step-by-step development of a course for managers of information systems and services in developing countries.

As a first step towards the realization of this project, it is foreseen that three fellowships will be granted to managers of information systems and services in developing countries, who will attend the Library Administrators Development Programme which is given at the School of Library and Information Services, University of Maryland, U.S.A., from 15 to 27 July 1973.

Following the course there will be discussions with the organizers of the course and the participants from developing countries on the usefulness of the course for the latter and the modifications that would have to be introduced in view of adapting it to the needs of managers of information systems and services of developing countries. Subsequent steps will then be taken to develop such a course.

III. Harmonization of International Assistance Programmes in Training and Education.

UNISIST has been called upon to undertake the promotion of co-ordination of international technical assistance efforts in training and education in the field of scientific and technical information and documentation for developing countries.

As a first step towards the development of this co-ordination plan, a contract was signed with Prof. A.S. Douglas, Vice-President of the International Federation for Information Processing (IFIP), to prepare a study setting out a basis for action. This study covers the following main topics :

1. The existing and anticipated requirements for training and education in the field up to 1980.
2. The methodology recommended to meet those requirements.
3. A survey of the extent to which existing known programmes of UNESCO and the UN agencies meet the requirements.
4. Related activities within Agencies, Governments and other bodies.
5. Priorities for future development.
6. A proposed plan of action.

The first draft of the study is already completed.

IV. Comparability of Higher Education Degrees in Information Science

An international comparative study is being carried out with the aim to assess the possibility of establishing a comparability of higher education degrees in information science, to be conceived broadly to include the various professions concerned with the handling of scientific and technical information, such as information specialists, information officers, information scientists and documentalists, with the exclusion of librarians.

As a start, a review is being made of the work which has already been carried out on the problems of the comparability of higher education degrees in other disciplines and items where information science differs from these will be identified. Furthermore, a methodology of gathering, analysing and correlating the data necessary for the study will be adopted and applied to a statistically significant sample of selected curricula in information science granted in the major developed countries. A minimum set of required subjects for a degree in information science may then be suggested.

The study is being carried out by Miss Ruth Katz, Rutgers University, New Jersey, U.S.A., for UNESCO, with the collaboration of an International Advisory Group of specialists from universities and national education agencies in various parts of the world, including experts in the comparability of studies and diplomas.

V. UNISIST Manual for the Education and training of Users of Scientific and Technical Information.

This Manual will serve as a basis for the organization of seminars and workshops in developing countries for the training of present and potential users. For this purpose UNESCO charged Prof. A. Evans from IATUL to prepare, in close co-operation with FID and WFAO, an outline of the Manual which will be submitted to the International Editorial Board for discussion and approval.

The Manual will present a concise, practical, easy-to-use guide with due emphasis on industrial and technical information. It will cover the following general area : a) the need for educating users; b) general methodology for running such a course, a guide to the lecturer, guidelines on how to adapt and modify the course according to specific audiences; c) how to use the various information tools available, kinds of publications related to various needs; d) unpublished information, case studies of how trade literature may be organized, specialized information centres, patent literature standards, world sources of information, e) kinds of information services available to the user, such as current awareness, SDI, retrospective searches - related to specific needs; f) how to set up a personal file; g) bibliographies of guides, source books, films, kits, and reference books covering the various disciplines of science and technology.

2.2. NATIONAL FEDERATION OF ABSTRACTING AND INDEXING SERVICES

by J.J. LLOYD

Pres.-Elect. NFAIS

Director, Science Inf. A.G.I.

NFAIS (National Federation of Abstracting and Indexing Services) is a mature infant of less than a year sprung, like Athena, fully grown and armed but from the head of NFSAIS (National Federation of Science Abstracting and Indexing Services). The reference to Athena is not bad because the Encyclopedia Britannica reports that Minerva (Athena romanized), "presided over all handicrafts, including professions and arts". About a year ago, those of us in NFSAIS (The National Federation of Science Abstracting and Indexing Services) realized that the problems of abstracting and indexing, as well as the techniques of information transfer, are the same for the arts and humanities as they are for the sciences. Moreover, chemistry and biology are linked today, through pollution and environmental concerns, with sociology and government : geology and theology have long since found a way to peaceful coexistence : and even physics - astrophysics - converts to metaphysics by a short fall back to the Big Bang of 12 billion years ago, or by a glance ahead at the nature of space and time within a Black Hole. Thus, in 1972 it was voted to broaden the membership of NFSAIS by dropping the S-exclusivity from its name.

The Federation is a United States organization with one foreign affiliate (more are welcome) whose history, purposes, aims and achievements have been brought together in this yellow book by Stella Keenan, our Executive Director. Miss Keenan, who is with us today, has extra copies of our Histories and Issues, 1958-1973, which she has assured me she will be pleased to distribute for as long as they last. I shall neither read from the book nor attempt to paraphrase what has been so well stated in it. I believe our time will be better used by defining the position of NFAIS vis-a-vis ICSU AB.

The Federation, at a national level, and the Board, at an international one, are parallel organizations that complement each others' activities rather than overlapping them. All of the six (or potentially seven) American member services of ICSU AB are also members of NFAIS. A measure of their conviction that both organizations have an important role to play in the information community is the economic support they provide for each, and probably of greater significance, the effort, the energy, and the man-hours that they contribute. The joint-membership of these services provides a link that strengthens the activities and assures the success of the undertakings of both organizations. For example, in the area of Standards, a major concern of both NFAIS and ICSU AB, it provides a restraint on the adoption of conflicting standards, and serves to produce a broader use through dissemination and approval by single members of one or the other organizations. Concepts for the improvement of information transfer through the cooperation of disparate services have been carried back and forth for evaluation and possible application to a national, or an international network, depending on the direction of the migration. A two-way channel of communication is maintained for U.S. services seeking to reach their foreign counterparts, and for non-U.S. services wanting to communicate with the American community. Focal points providing radiation centers for news, needs, and mutual assistance exist, through the organizations, on both sides of the ocean. The welfare of ICSU AB is of concern to NFAIS, as that of NFAIS is to ICSU AB, as the membership of both organizations, and the users of the services as well as the total information community are served by the symbolic relationship of the two.

For example -and I will be quoting liberally from a paper by Stella Keenan that appeared in the March, 1973 issue of Special Libraries - NFAIS, which produced and published a directory of abstracting and indexing services, and FID which did likewise, are now engaged in a joint enterprise to build a machine-readable file that will merge the information that will be continuously updated and provide cross-indexed services in a printed form to serve the entire information community as well as the users of the ICSU AB member products. The work on this project, which began in 1971, is being funded (for NFAIS) by the National Science Foundation, and for FID under a contract with UNESCO.

Similarly, the ISDS which was conceived by ICSU AB is of great concern to NFAIS members who have expressed their intent to utilize ISSN's in their bibliographic records if it ever gets off the ground. Also, the first draft of the ICSU AB Reference Manual was tested by NFAIS members under the 1972 program organized for that purpose.

Finally, NFAIS has declared its intention of applying for entrance to ICSU AB as an Observer, in 1974. It now remains only for the Federation's Board of Directors to find the necessary funds before formally submitting an application.

If there are specific questions on NFAIS purposes, programs, or activities, we will be happy to hear them and either Miss Keenan or myself will try to answer them for you.

5.2.3 IFLA ACTIVITIES RELATIVE TO THE WORK OF ICSU AB DURING 1972-73

by A.J. EVANS
IFLA Representative
Librarian of Loughborough University
of Technology.

The principal area of activity of IFLA of particular interest to ICSU AB are as follows :

1. The UNISIST Working Group on Systems Interconnection has been devolved into several more specific groups and we have particular interest and representation (by M. Van Wesemael of the University of Utrecht and Mrs D. Anderson the IFLA Committee on Cataloguing) in the Working Group on Bibliographic Data Interchange.
2. The Chairman of the IFLA Working Group on Developing Countries (M. J.S. Soosai of the Rubber Research Institute of Malaysia) is, also a member of the UNISIST Working Group. It is also worth noting that the IFLA Working Group has recently received a grant of \$ 27,000 from the Canadian International Development Agency to further its program.
3. Further small contracts with UNESCO have been negotiated for
 - (a) Input and output requirements and methods for establishing national/regional centres for the International Serials Data System (ISDS) particularly in developing countries.
and
 - (b) A preliminary study to define the conditions of a national network of specialised libraries and possibly international/regional network co-operation.

4. The Working Group on "International Standard Bibliographic Description for Serials" (ISBDS) has finished its task in co-operation with Mrs Rosenbaum of ISDS.
5. Work on the version of the text of the ISBD for Monographs (published in 1971) is progressing and we are looking forward to continuing co-operation with ISO/TC 46 and UNISIST.
6. IFLA has adopted "Universal Bibliographic Control" (UBC) as one of its principal policy objectives. UNESCO has particular interest in this and a more detailed statement on this is available if required.

4. IATUL ACTIVITIES RELATIVE TO THE WORK OF ICSU AB DURING 1972-73

by A.J. EVANS

IATUL Representative

Librarian of Loughborough University of
Technology.

A very successful conference was recently held in Copenhagen on "Computer based SDI Services". This will be published with a full report of discussions towards the end of this year.

A Contract has recently been given to Professor Evans and M. R. Rhodes of Loughborough University on behalf of IATUL to prepare a "UNISIST Manual for the education and training of users of scientific and technical information".

The objective will be to produce a guide for teachers and information specialists responsible for organizing and running courses, seminars or workshops in developing countries. It will serve as a basis for organizing programmes for the education and training of users of scientific and technical information -both in the form of a basic education course for students at university level and as a training workshop for practitioners.

SESSION 6 :

INDEXING

Chairman : Ph. PARKINS

6.1. INDEXING, CLASSIFYING, SEARCHING
AS SEEN FROM THE ACADEMIC WORKSHOP FLOOR

BY K. FAEGRI
Secretary General, IUBS

Motto : It is not always necessary to
take the car to cross the street -
it may even be faster to walk.

The restriction indicated in the title should be perfectly clear. The activities mentioned have many aspects, and I shall confine myself to one of them. Hopefully, I shall not say anything which is impossible as seen from what might be called "the other side". Also, I am mainly speaking as a biologist.

There is another workshop which I shall be obliged to neglect more decisively, namely that of the industrial laboratories, chiefly because of ignorance about their working. Whereas there may be very vague scientific delimitations between the academic and industrial laboratories, their administrative set-ups are, I understand, in many respects so different that I cannot speak for them, and so are their economic evaluations - which does not mean that they are more or less realistic than mine.

Also, I have neglected the librarians' point of view. In this respect, when we are dealing with knowledge-in-the-making, librarians cannot be held responsible for the conceptual problems of a search - however important a modern librarian/documentalist may be as a mediator or translator between the scientist and the services.

Looking at the problem from a business angle, the secondary services have a product to sell, and they have customers to sell it to. Obviously the product, in order to sell, must be geared to the customers' needs. In what I am going to say, this is a predominant theme, although I shall not refer to it too often. But, this contribution should be looked upon as an attempt to define some of the demands of one group of potential customers. A product may be superior : if it does not match the customers' needs, it cannot be sold, and it is as useless as any piece of unsold commercial goods resting on the shelf. So one may consider this a an attempt at product/Customer analysis.

Classifying, indexing and searching are so closely interconnected as to be inseparable. Without indexing, no classification, without index and classification, no search is possible (I shall qualify this below) and without search, indexing and classifying become meaningless and expensive play. The three activities represent a break-down of the one function, which we may call the total retrieval function, retrieval being the ultimate goal.

The material of classification is concepts. The material of indexing has to be words. Words are the handles we need to manipulate the concepts. As concepts have to be expressed in words (certain formulae excepted), there is no fundamental difference between a classification and an index. The latter is a concretization of the former. Words carry no interest in themselves they only interest us because they cover concepts.

Retrieval has two completely different forms, which we may catchword as current awareness and retrospective search. Of these, current awareness represents rather smaller problems in this context, and I shall therefore not spend too much time on it here. The problems encountered in retrospective search will mostly also encompass the lesser ones of current awareness.

As an example of current awareness strategy I may quote my own experience with Biological Abstracts. To run through BASIC and track down the numbers corresponding to my profile takes some 10 minutes at most. There may be some 25 of them. To re-arrange the numbers sequentially takes less than 5 minutes. To track these numbers down in the relevant volume is done in another 15 minutes. Totally the search will take me about half an hour per half month, of which I'd have to do half of the work anyhow, even if I get SDI print-outs. I have tried both, and the tapes did not find anything relevant that could not be found in BASIC - of course not, as the tapes sort out of the same store of terms, too.

If speed is so terribly, terribly important (usually it is much less important than physicists and journalists will have us to believe) the tapes do come sooner than BASIC and the issues. But the tapes only give you the titles, and you will very often have to wait for the issues to find out (hopefully) from the abstract whether it is worth trying to get hold of the publication. By the above method, I get the abstract at the same time and in the same operation that gives me the title.

The classical retrospective search situation arises when a scientist has to or chooses to tackle a new problem, new to himself, and new to his lab. As Ziman reminded us at Ustaoset, there are many ways of obtaining the initial information, but at some stage or other, the retrospective search is almost unavoidable.

The meaning of the term retrospective may vary. In rapidly developing branches, especially with a good textbook or adequate reviews, a few years may be sufficient. In taxonomy we need 220 years' retrospection, which the services, unfortunately, are not yet equipped to give us. Mostly, the term will mean something in between, say, 5 and 15 years. Neither here nor later shall I include research which historians have to carry out to write the history of the relevant science.

Now, there are two ways of doing this. One is to find somebody with an appropriate black box, insert the magic word and sim-sala bim : there are your references. The other involves leafing through volumes and volumes of Biological Abstracts, or Chemical Abstracts or Bulletin Signalétique, or even more than one of them. It may take weeks.

Why, then, the second, apart from general human conservatism and ignorance ? I am afraid the cost/benefit equation in this case is a very complicated one. Mostly, your budget will not allow for a search to be paid out of ordinary funds (1) because they are too small anyhow, and (2) because they are all earmarked for anything else. This means obtaining extra funds ; it means writing requests again, having to explain to the university authorities what all this means and why you want to make it in this new-fangled manner ; then having the frustrations of a refusal another more explicit request, more explanations etc.. ad nauseam. Of course, by the time one is thoroughly nauseated, one gets the money. Now comes the next batch of frustrations : the construction of a search profile. The first one is impossible, and the second one is not much better. Letters back and forth. Again, in the end things straighten themselves out, one gets the magic tape and the world lies in sunshine at your feet. ? Then you discover that you will need some costly piece of apparatus and there is the same process once more, but this time the university authorities tell you that because you used so much money on your search, there is nothing more left for you on this year's budget.

Ridiculous. The thing is ridiculous, but all too frequently this is the way it works.

With these prospects, I hope you will understand why a scientist, even with full knowledge of the potentialities of method one, may prefer to load up his car with relevant volumes, sink down in an easy chair with a comforting glass not too far off, and start that

favourite preoccupation : browsing, which may have the added benefit of giving of all kinds of other, unexpected, delightful, and mostly useless pieces of information and enjoyment. And the funny thing is that unless the search is extremely complicated, method two will usually work much faster than the first, considered all that has to be done before the machine can do its job in 20 milli seconds.

And when you now need your costly piece of equipment, the credit is at any rate still intact.

In view of the rarified atmosphere in which our computerized colleagues find themselves, it may be necessary to describe a situation like it is most of the time in academic life, small and poor universities being, as I have said before, in majority in this world.

The primary litterature is too immense. Except in small, esoteric fields, one cannot browse in it. The abstracting services are indispensable. They are dependent on their computers. That does not mean that the user is also dependent of the computer. If the computer has done its classification there are other ways the human brain can work. It may be oldfashioned, but not necessarily obsolete.

If we accept that words stand for concepts, and that concepts can only be expressed in words, there is really nothing to beat the old alphabet for searching. But it has one very strict limitation. One would prefer to find Mus, Mouse and Mice in the same place. Theoretically, there may be warnings all over the place : see also ... But only theoretically. Either one has to run all these references automatically in every index, and the indexes would then become twice as thick or one must be on the alert all the time to get the references which are valid for that volume which would, in the long run be an impossible task.

You can program a computer to print Mus every time the index said House, or Mice, but how often is it done ?

And what about rodents ? The usual search strategy is to look first for the smallest unit, say a species. Then, if that is not too successful, one will search for the next category, say the genus, and work upward until one is certain that the theme is exhausted. Obviously, a machine can be programmed to do the same, but I can see the avalanche of useless rodents coming out of it. Because manual search goes hand in hand with a preliminary quality control, the same would not happen there.

But now we are drifting very near the hierarchical index. I may use index in a slightly wider meaning than usual, but that is on purpose. In such an index whatever they are called, every rodent will fall in the same area ; Mus will occupy a space of its own inside the rodent cage, and Mus musculus, under any synonym, would form a neat little nest of its own.

For computerized search such considerations are less valid. In a search profile you may enter as many terms for mouse as you like, and the computer will spew them out infallibly. The only difficulty is the lack of discrimination inside the higher taxa. But I am fully willing to accept that for machine search the hierarchical index is unnecessary. But it is necessary for the establishment of a search profile or a thesaurus!

Let us forget about indexes for the time being and look at classification. It is when we arrive at classifying that opinions begin to diverge. Let us first agree that some type of classification is always necessary. Alphabetification is also classification, although a very frivolous one, and it neglects the primary rule of classification, namely that the objects should be classified according to immanent, not external properties.

An alphabetical classification is in itself hierarchic, only the hierarchy is in itself a nonsense one. The contrast is, of course, the truly, logically hierarchical classification, in which each higher category logically comprises the lower one.

In biology more than elsewhere, in mathematics probably least, and in the other sciences in between, there are three types of concepts to classify, or perhaps one should rather say I + 2A + 2B. Class I are what we may call genera, i.e. in a logical, not a taxonomic sense. These are units existing in nature. Their production follows the laws of nature and can only indirectly be influenced by man. For this class there exists excellent classifications, which are strictly hierarchical, and where, by entering at the right hierarchical level, one immediately gets hold of all relevant data. It is one of the stupidest things about all other classifications, DDC, UDC, alphabetic, what have you, that they tend to break up this primary one, which is self regulating, and which is studied and interpreted by professional classification people with special expertise in this relevant field. If the book classification people would just leave this chapter alone, things would be much easier. The only thing left to be decided, is the lowest hierarchical level to which one will classify : family, genera, even species. Obviously, this varies enormously between services and institutes, but it represents no difficulty at all. Once one has decided the level the rest is fixed by nature. And in such a classification all the mice will meet on common Latin ground - and the Sus, pigs, and piglets, too. The advantage is that anybody working acquainted with such a field will be able to pick out the relevant data at a speed which will astonish a data cell.

In the above example, I have taken my data from taxonomic classification because that it the one is best elaborated. However, there are also logical classifications of the same kind.

So whatever classification method is to be used, all generic terms should automatically be translated to the relevant standard term : scientific names for organisms, IUPAC names for compounds, etc.. And then left alone !

Unfortunately, the two other groups are more difficult to deal with. We may call them concepts and processes. Phylloaxis is a concept, photosynthesis is a process. Naturally, these are also governed by the laws of nature, at any rate within science, but the logic of hierarchical classification is much less obvious here. We are much freer to manipulate these concepts, and the nomenclature is of a different type. There is no given limit. The consequence is that all too often we get a classification of catch words instead of one of concepts and processes.

Geology-of-the-moon is a typical catchword. People weren't used to go to the moon and bring back rocks earlier, and if we are caught by the moon, we are faced with a completely new class in our classification. New classes tend to disrupt the logical system ; therefore the first question should ask, is, if this new word really embodies a new concept. New concepts do arrive, but they are extremely rare, and usually there is a conceptual pigeonhole where they belong. If we try to find the concept behind the moon word, it is easy : it is regional geology, area geology or whatever one has called it. It costs a little more money to collect your samples and prepare your geologic maps of the Moon. But that is the whole difference. And I am afraid I shall maintain this in spite of Lloyd's assertion that e.g. exogenic processes on a body without atmosphere must be different from those on Earth. Even so, they are still erosion, deposition, etc, however different in details.

Of course, this example is ridiculously simple, that is why I chose it. Let us take another : Space biology. The word is ambiguous. It may, again, mean regional biogeography, but mostly it is simply integrated physiology of man. This example shows that an additional defect of catchwords : they are very often logically ambiguous. Ambiguity may be a positive thing when it is due to the interdisciplinary character of the concept. But all too often it is an ambiguity of the above, sloppy type, when the completely irrelevant fact that material is collected by means of an extremely expensive device causes people to mix together things that are not at all related!

Catchwords are like ladies'fashions ; they come and go. To-day it is space. Does anybody remember the mitogenetic radiation, or the days of circadian rhythms ? The former was a blind alley, however many walked it ; the latter was a field that is still valid, but in no way so much as to deserve its own main entry any more. Logically, it is a subcategory under periodicity, which in the long run through more categories of higher rank end up in physiology.

Catchwords may be excellent for machine search : if an item has been entered under mitogenetic radiation it will remain stacked there forever, notwithstanding the fact that nobody will ever put it into a search profile. But we cannot clutter up a logical system with these things.

Genera are the simplest to bring into a logical, hierarchical classification ; concepts are much more difficult ; processes are the hardest ones. But in reality, there is no difference in principle between the classification (taxonomy) of genera and that of the two other types. Only, whereas the relevant people know their taxonomy up and down, very few outside the library world have ever taken the trouble to look into the two other classifications. And when we incessantly hear that DDC, UDC, etc. cannot be used in modern science, it is simply (in addition to the

conservatism of those people sitting on these systems) because people do not take the trouble to look into the logic of the things. Obviously, there is no prefabricated pigeonhole for moon rocks is a classification produced, say 20 years ago. But, as I have shown, there is the logical framework within which the rocks can be accommodated. And there is no reason to break up anything : a small accommodation inside the framework is sufficient.

One thing I have discovered, and with some surprise, is that too many of those who denounce UDC, do not know what it is. UDC is not a string of figures to be replaced by any other string of figures, more convenient in the individual case. UDC is a philosophy, and it should only be replaced by another and better philosophy. Has anybody got a better one ?

Also, a service may change its classification from one year to another without too catastrophic results. The data base does not need it, printed material cannot be changed once it has been issued, so only the present print-out is concerned. A librarian cannot do the same. True, he can stop his old classification and start a new one, but most librarians will abhor the idea of two classifications for the same subject, and re-classifying is an arduous exercise. So, there is a great deal to be said for the librarians' hesitance to change their classifications to the whims of the science that is most in vogue just now.

I am discussing this at such length because in the long run, the hierarchical classification is the alternative to machine search. Just as the taxonomist works much faster than he theoretically should because he can discriminate during the search, anybody conversant in the relevant classification of concepts and processes can do the same, provided the classification is (1) logical and (2) consistent. The problems of current awareness are, as I have already said, simpler. As the number of items to be searched between at any one time is much smaller, one can do with a much

coarser classification. And also the classification can be much more ad hoc. During a period when moon geology and space biology are of interest to many scientists there is no real reason why one should not use these words as captions. In a few years, interest may have shifted, and one may drop those terms. But it would lead to impossible results if one should be obliged to carry them along for ever.

One exercise that seems to me completely futile is the indexing of individual volumes of journals. Karl Heuman spoke about this in a vein of black humour at Ustaoset last year. Of course, we all know that most journals still produce their indexes (1) poorly and (2) expensively, and that it can be done better by resorting to modern methods. But this is not very interesting. The question is if it is worth doing. I wonder? Imagine asking the reader of a journal the following question: Your index will take x pages, and the cost per page to the journal will be above average. What do you prefer: x plus more pages of text or an index which I guarantee you'll find better and speedier in Biological Abstracts which you will have to consult anyhow. No, I don't wonder.

To sum up:

1. For machine search no classification is necessary, provided there is a classified thesaurus for the construction of search profile.
2. For manual current awareness search a very coarse, ad hoc classification is sufficient, which can easily be accommodated.
3. For manual retrospective search, a logical hierarchical classification is necessary.
4. Provided the services put out indexes like BASIC at reasonable speed, machine search does not pay for current awareness.
5. It should not be necessary with manual retrospective search. It is.

6.2. INDEXING

by J.J. LLOYD

Director of Science Information,
American Geological Institute

I have an advantage over the rest of you who have heard Professor Faegri's disquisition as I was given a copy of it several months ago with an invitation to respond. This may turn out to be a disadvantage should Professor Faegri decide to abandon his text, either in whole or part, and leave me holding the bag - filled with meaningless rebuttals. Professor Faegri calls his paper, Indexing, classifying, searching, as seen from the academic workshop floor.

He describes a scientist sinking down into his easy chair to search the printed indexes of his subject, "with a comforting glass not too far off." I cannot resist the observation that had that scientist pushed that comforting glass a little farther off, we might be seeing the problem from at least the level of the workshop bench.

Implicit in the restrictive sense of the title, and explicit in the text, Professor Faegri has elected "not to describe", or to ignore, the service view of the problem. That is as though I were to take my non-functioning watch into a repair shop and tell the expert proprietor "Never mind what you know about watches - I want it rebuilt this way." And lay out my plan. With all of my respects to the Professor as a user of information, I hasten to assure him that I look at my watch very frequently.

The view of the industrial research scientist is also neglected, "more decisively" than the services. I have the feeling that Professor Faegri knows that the industrial scientist's information gathering techniques are not essentially different from his own in academia, but that the industrial scientist is granted more funds with which to pursue his harvest. Whether the industrial establishment is richer than the aca-

demy, or if it is smarter than the academy because it takes factors for scientist's time and research efficiency into its cash budget, thus becoming richer, is not a topic of our discussion although it is a theme that would be interesting to pursue at another time. But a strong note coming through is that Professor Faegri's real grievance is not with the ordering of information, but with the parsimony of the academic establishment.

The last of the neglected participants in the information transfer process, and the one that Professor Faegri avows that he "gladly" neglects, is the librarian. And now, willy-nilly, neglected, rejected, or forlorn, I must inject the service view. The Professor says, " -- the librarian has no independent demand on the indexing or classifying activities because he shall not do any searching." I must completely disagree with this attitude and this concept. The library, or in today's buzz-words, the information dissemination center, is the principal searcher and the agency largely responsible for the results of that search. The librarian is an integral part of the continuum that transfers information from its scientist-generator to its scientist-user. The day may come when every scientist will be capable of sitting in front of a console and keying his request on line to the deus ex machina that is spinning tape. I know a few scientists who now enjoy that capability but they are a small minority. From the Professor's telling of his frustration in composing a search profile I must assume that he is not in that minority group. The profile was undoubtedly written by a librarian, now called search editor, an employee of the I.D.C., the new library. Although I am not a librarian myself, I know something about the frustrations of search editors trying to cajole, wheedle, and pry out of a scientist what it is that he really wants to know.

"The material of classification is concepts." I can accept that if we agree that a thing is also a concept in the sense that a mouse represents the concept of a small mammal that likes cheese and abhors cats. "The material of indexing is words." I reject that out of hand and would like to remind Professor Faegri that the basic precept of semantics is that "the map is not the road and the word is not the thing."

Or may I take the time to read that delightful conversation from Through the Looking Glass.

"There's glory for you," said Humpty Dumpty.

"I don't know what you mean by glory," Alice said. Humpty Dumpty smiled contemptuously.

"Of course you don't -till I tell you. I meant there's a nice knock-down argument for you!"

"But glory doesn't mean a 'nice knock-down argument,'" Alice objected.

"When I use a word," Humpty Dumpty said in rather a scornful tone, it means just what I chose it to mean -neither more nor less."

"The question is," said Alice, "whether you can make a word mean so many different things."

"The question is," said Humpty Dumpty, "which is to be master - that's all."

Thus, I insist that if the material of classification is concepts, then the material of indexing is also concepts. This point is basic to all that follows in Professor Faegri's paper, and the point must be understood by anyone who has ever concerned himself with indexing.

In the next breath, or in the next paragraph, Professor Faegri provides us with proof of the brilliant intuition of Lewis Carroll, and puts himself solidly on the side of Humpty Dumpty in making words mean what he chooses them to mean. "Retrieval has two completely different forms," he says, "which we may catchword as current awareness and retrospective search. Of these, current awareness represents rather smaller problems in this context - -." Now then, to most of us the concept of "current awareness" is totally unrelated to the concept of "retrieval". I think that we would prefer to use that clumsy phrase, selective dissemination of information -or SDI, and recognize it, together with "retrospective search" as hierarchically related to the concept of "retrieval". Furthermore I disagree that SDI, or "current awareness"

(if we are talking about the same thing), represents smaller problems than retrospective search. My own feeling about SDI is that it is the same as retrospective search, except that it represents a profile submitted periodically to a restricted information file, rather than being submitted one time only to a total file. The problems are equal, I am not merely quibbling over Professor Faegri's use of a term, or my own use. I am trying to point up the difficulties and dangers involved in the use of words, and to indicate the problems that are faced day after day by a search editor interacting between the scientist and a data base. If I do no more than make the Professor just a little more appreciative of the librarian I shall be content.

Incidentally, I should like to know the nature of Professor Faegri's search whose price was equivalent to that of a "costly piece of apparatus". I suspect some hyperbole here, but it touches upon a theme that is close to my heart. For a long time information has been the cheapest tool in a scientist's laboratory. Sooner or later he is going to have to pay for it at fair market value.

The Professor confides that he knows nothing "about logical systems in other sciences", and I presume that he means other than biology because this is followed by the information that one Tschulok wrote an "unreadable" book in which he successfully subdivided biology in a logical manner. Then, leaving biology in the rosy glow of the setting sun, he attacks "geology-of-the-moon" (I prefer selenology) as a catchword unnecessarily invented for classification as the geology-of-the-moon concept will fit very nicely under the concept of regional geology, or area (sic) geology ! Now I happen to know that Professor Faegri's son-in-law is a very good geologist, and I suggest that he ask him if erosional processes on an atmosphere-less body are the same as in a region with the thick atmosphere of, let us say, Norway. Or if impact bombardment is the same on the moon as it is in London ? Or if mineralogy, petrology, and metalogenesis are the same on a water-free planet as they would be on earth ? Or if the tectonics of a small body are necessarily analagous to the tectonics of a large one ?

What I am saying is that the concept of lunar geology, or selenology, is not the same concept as regional earth geology (and I think that most geologists will agree with me) and I am making the point to illustrate that classification, and indexing are tasks for the professionals in each discipline, and even they may frequently disagree.

My time must be running out so let me just get down some random observations.

Programs have long existed for computers to print out each time that Mouse or Mice is called for. It is called "word explosion".

KWICS and KWDCS do not fit my concept of "standardized vocabularies", but of elementary indexing systems. The definition of KWACK, however it is spelled, is one we could probably agree on.

The lowest hierarchical level of concept classification represents great difficulty as it must have universal approval of all users and all system managers.

Finally, Knud, thank you for provoking this stimulating exchange, and don't give up the computer search - not only is it here to stay, but in ten to twenty years it may be the only search instrument available to you.

GLOSSARY OF ACRONYMS

GLOSSARY OF ACRONYMS

AAA	ASTRONOMY AND ASTROPHYSICS ABSTRACTS
AGI	AMERICAN GEOLOGICAL INSTITUTE
AIP	AMERICAN INSTITUTE OF PHYSICS
APA	AMERICAN PSYCHOLOGICAL ABSTRACTS
BA	BIOLOGICAL ABSTRACTS
BIOSIS	BIOSCIENCES INFORMATION SERVICE OF BIOLOGICAL ABSTRACTS
BRGM	BUREAU DE RECHERCHES GEOLOGIQUES ET MINIERES
BS	BULLETIN SIGNALTIQUE DU CNRS
BST	BIBLIOGRAPHIE DES SCIENCES DE LA TERRE
CAS	CHEMICAL ABSTRACTS SERVICE
CID/B	CHEMIE INFORMATION UND DOKUMENTATION/BERLIN
CNIDST	COMITE NATIONAL D'INFORMATION & DOCUMENTATION SCIENTIFIQUES ET TECHNIQUES
CNRS	COMITE NATIONAL A LA RECHERCHE SCIENTIFIQUE
EI	ENGINEERING INDEX INC.
EM	EXCERPTA MEDICA
IAU	INTERNATIONAL ASTRONOMICAL UNION
IATUL	INTERNATIONAL ASSOCIATION OF TECHNOLOGICAL UNIVERSITY LIBRARIES
ICSU AB	INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS ABSTRACTING BOARD
IFLA	INTERNATIONAL FEDERATION OF LIBRARY ASSOCIATIONS
INSPEC	INFORMATION SERVICES FOR THE PHYSICS AND ENGINEERING COMMUNITIES
ISDS	INTERNATIONAL SERIALS DATA SYSTEM
ISO	INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
IUBS	INTERNATIONAL UNION OF BIOLOGICAL SCIENCES
IUCr	INTERNATIONAL UNION OF CRYSTALLOGRAPHY
IUGS	INTERNATIONAL UNION OF GEOLOGICAL SCIENCES
IUPAC	INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY
IUPAP	INTERNATIONAL UNION OF PURE AND APPLIED PHYSICS
JICST	JAPAN INFORMATION CENTER OF SCIENCE & TECHNOLOGY
NFAIS	NATIONAL FEDERATION OF ABSTRACTING AND INDEXING SERVICES
NLM	US NATIONAL LIBRARY OF MEDICINE
PB	PHYSIKALISCHE BERICHTE
RZ	REFERATIVNYI ZHURNAL
UKCIS	UNITED KINGDOM CHEMICAL INFORMATION SERVICE
UNESCO	UNITED NATIONS EDUCATIONAL SCIENTIFIC AND CULTURAL ORGANIZATION
ZM	ZENTRALBLATT FÜR MATHEMATIK
ZR	ZOOLOGICAL RECORD